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NUCLEAR GROUND-STATE MASSES AND DEFORMATIONS*

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We tabulate the atomic mass excesses and nuclear ground-state deformations of 8979 nuclei ranging from ^{16}O to $A = 339$. The calculations are based on the finite-range droplet macroscopic model and the folded-Yukawa single-particle microscopic model. Relative to our 1981 mass table the current results are obtained with an improved macroscopic model, an improved pairing model with a new form for the effective-interaction pairing gap, and minimization of the ground-state energy with respect to additional shape degrees of freedom. The values of only nine constants are determined directly from a least-squares adjustment to the ground-state masses of 1654 nuclei ranging from ^{16}O to ^{263}106 and to 28 fission-barrier heights. The error of the mass model is 0.669 MeV for the entire region of nuclei considered, but is only 0.448 MeV for the region $N \geq 65$.

* This paper is dedicated to the memory of our friend and colleague John L. Norton, who wrote the original versions of the computer programs that we use to calculate the single-particle energies and resulting shell and pairing corrections for a deformed folded-Yukawa single-particle potential.

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CONTENTS

1. INTRODUCTION

We presented our first macroscopic–microscopic global nuclear mass calculation 14 years ago.[1,2] This calculation, which was based on a finite-range liquid-drop model for the macroscopic energy and a folded-Yukawa single-particle potential for the microscopic corrections, was somewhat limited in scope. With only 4023 nuclei included, it did not extend to the proton or neutron drip lines or to the region of superheavy nuclei. Also, the quantities tabulated were limited to ground-state masses, Q_2 and Q_4 moments, and microscopic corrections.

Our next publication of calculated nuclear masses occurred seven years ago.[3,4] In these calculations new pairing models had been incorporated and two different macroscopic models were investigated, namely the finite-range liquid-drop model (FRLDM)[3] and the finite-range droplet model (FRDM).[4] These abbreviations are also used to designate the full macroscopic–microscopic nuclear-structure models based on the respective macroscopic models. The former is the macroscopic model used in the 1981 [1,2] calculations and the latter is an improved

version[5] of the droplet model.[6-8] Because there were several unresolved issues in the 1988 calculations,[3,4] those tables should be regarded as interim progress reports.

We have now resolved these issues, which were related to the pairing calculations,[9] to the effect of higher-multipole distortions on the ground-state mass,[10] and to some details of the shell-correction and zero-point-energy calculations.[11] The resolution of these issues has resulted in the present mass table. We first briefly review some important results obtained in the original 1981 calculation and enumerate the additional features of our new calculations.

Subsequent comparisons of predictions of our original 1981 model[1,2] with nuclear masses measured after the calculations were published showed that the model would reliably predict masses of nuclei that were not included in the determination of model constants.[3,11] With a properly defined model error,[3] the error in new regions of nuclei is about the same as that in the region where the constants were adjusted. In the most recent investigations[11,12] of the 1981 mass calculation in new regions of nuclei, the error for 351 new nuclei was only 6% larger than the error in the region where the model constants were adjusted. Furthermore, the error did not increase with distance from β stability.

Also, many other nuclear-structure properties were successfully predicted by the model for nuclei far from stability.[13-16] A special result of the 1981 mass calculation was the interpretation of certain spectroscopic results in terms of an intrinsic octupole deformation of nuclei in their ground state.[1,17-19]

Here we present results of our new calculations of nuclear ground-state masses and deformations. Relative to the 1981 calculations we use an improved macroscopic–microscopic model, include additional shape degrees of freedom, extend the calculations to new regions of nuclei, and calculate a large number of additional nuclear ground-state properties. These additional properties will be published in a forthcoming article devoted to nuclear astrophysics.[20]

Specifically, we have improved the model in the following areas:

- Our preferred macroscopic model is now the finite-range droplet model, which contains several essential improvements[4,5] over the original droplet model.[6-8]

- The pairing calculations have been improved. Our pairing model is now the Lipkin–Nogami (LN) model.[21-23] We also use an improved functional form of the effective-interaction pairing gap and an optimized pairing constant.[9,24]

- An eighth-order Strutinsky shell correction is used.

- The ϵ zero-point energy is still added to the calculated potential energy to obtain the ground-state mass, but no γ zero-point energy is added, since the method of calculation is not sufficiently accurate.[11]

- We minimize the ground-state energy with respect to ϵ_3 and ϵ_6 shape degrees of freedom, in addition to the ϵ_2 and ϵ_4 shape degrees of freedom considered previously.

- Each ground-state shell-plus-pairing correction is based on single-particle levels calculated for the constants appropriate to the nucleus studied. Earlier, a single set of single-particle levels was used for an extended region of nuclei in conjunction with an interpolation scheme to improve accuracy.

- The calculation has been extended from 4023 nuclei to 8979 nuclei, which now includes nuclei between the proton and the neutron drip lines and superheavy nuclei up to $A = 339$.

In the macroscopic–microscopic approach it is possible to calculate a large number of nuclear-structure properties in addition to nuclear ground-state masses. These include the following:

Even-multipole ground-state deformations	
Quadrupole ϵ deformation	ϵ_2
Hexadecapole ϵ deformation	ϵ_4
Hexacontatetrapole ϵ deformation	ϵ_6
Related quadrupole β deformation	β_2
Related hexadecapole β deformation	β_4
Related hexacontatetrapole β deformation	β_6
β-decay properties	
Q value of the β decay	Q_β
β-decay half-life	T_β
β-delayed one-neutron emission probability	P_{1n}
β-delayed two-neutron emission probability	P_{2n}
β-delayed three-neutron emission probability	P_{3n}
Lipkin–Nogami pairing quantities	
Neutron pairing gap	Δ_n
Proton pairing gap	Δ_p
Neutron number-fluctuation constant	λ_{2n}
Proton number-fluctuation constant	λ_{2p}
Odd-particle spins	
Projection of the odd-neutron angular momentum along the symmetry axis	Ω_n
Projection of the odd-proton angular momentum along the symmetry axis	Ω_p
α-decay properties	
Q value of the α decay	Q_α
α-decay half-life	T_α
Octupole properties	
Octupole ϵ deformation	ϵ_3
Related octupole β deformation	β_3
Decrease in mass due to octupole deformation	ΔE_3

FRDM mass-related quantities	
Spherical macroscopic energy	$E_{\rm mac}^{\rm sph}$
Shell correction	$E_{\rm shell}$
Pairing correction	$E_{\rm pair}$
Microscopic correction	$E_{\rm mic}$
Calculated mass excess	$M_{\rm th}$
Experimental mass excess	$M_{\rm exp}$
Experimental uncertainty	$\sigma_{\rm exp}$
Discrepancy	ΔM
Calculated binding energy	$E_{\rm bind}$
FRLDM mass-related quantities	
Finite-range liquid-drop model microscopic correction	$E_{\rm mic}^{\rm FL}$
Finite-range liquid-drop model mass excess	$M_{\rm th}^{\rm FL}$
Neutron and proton separation energies	
One-neutron separation energy	S_{1n}
Two-neutron separation energy	S_{2n}
One-proton separation energy	S_{1p}
Two-proton separation energy	S_{2p}

As mentioned above, we present here the calculated ground-state masses and deformations. Some of the remaining quantities will be presented in a forthcoming publication.[20]

In the next section we specify the macroscopic–microscopic finite-range droplet model in some detail. We discuss in particular the constants of the model, paying special attention to how to count the number of constants of a model. We present a summary of *all* constants in the model, including both those constants that have been determined from a least-squares adjustment to ground-state masses and fission-barrier heights and those that have been determined from other considerations. After our model has been specified, we discuss how it has been applied to the current mass calculation.

2. MODELS

In the macroscopic–microscopic method the total potential energy, which is calculated as a function of shape, proton number Z, and neutron number N, is the sum of a macroscopic term and a microscopic term representing the shell-plus-pairing correction. Thus, the total nuclear potential energy can be written as

$$E_{\rm pot}(Z, N, \text{shape}) = E_{\rm mac}(Z, N, \text{shape}) + E_{\rm s+p}(Z, N, \text{shape}). \quad (1)$$

We study here two alternative models for $E_{\rm mac}$, given by Eqs. (40) and (62) below. The shell-plus-pairing correction is given by Eqs. (75) and (76) below.

It is practical to define an additional energy, the microscopic correction $E_{\rm mic}$, which is different from the shell-plus-pairing correction $E_{\rm s+p}$. For a specific deformation $\epsilon_{\rm a}$, the latter is determined solely from the single-particle level spectrum at this deformation by use of Strutinsky's shell-correction method[25,26] and a pairing model. In contrast, the microscopic correction is given by

$$E_{\rm mic}(\epsilon_{\rm a}) = E_{\rm s+p}(\epsilon_{\rm a}) + E_{\rm mac}(\epsilon_{\rm a}) - E_{\rm mac}(\epsilon_{\rm sphere}). \quad (2)$$

This definition has the desirable consequence that the potential energy $E_{\rm pot}$ of a nucleus at a certain deformation, for example, the ground-state deformation $\epsilon_{\rm gs}$, is simply

$$E_{\rm pot}(\epsilon_{\rm gs}) = E_{\rm mic}(\epsilon_{\rm gs}) + E_{\rm mac}(\epsilon_{\rm sphere}). \quad (3)$$

However, the reader should note that the term microscopic correction is sometimes used instead for shell-plus-pairing correction. When results are presented it is usually $E_{\rm mic}$ that is tabulated, because it represents all additional effects over and above the *spherical* macroscopic energy. In practical calculations it is $E_{\rm s+p}$ that is calculated. To obtain the total energy a *deformed* macroscopic energy term is then added to $E_{\rm s+p}$.

There exist several different models for both the macroscopic and the microscopic terms. Most of the initial works following the advent of Strutinsky's shell-correction method used the *liquid-drop model*[27,28] as the macroscopic model.

The preferred model in the current calculations has its origin in a 1981 nuclear mass model,[1,2] which utilized the folded-Yukawa single-particle potential developed in 1972.[29,30] The macroscopic model used in the 1981 calculation was a finite-range liquid-drop model, which contained a modified surface-energy term to account for the finite range of the nuclear force. The modified surface-energy term was given by the Yukawa-plus-exponential finite-range model.[31] The macroscopic part in this formulation does not describe such features as nuclear compressibility and corresponding variations in the proton and neutron radii.

The droplet model,[6–8] an extension of the liquid-drop model[27,28] that includes higher-order terms in $A^{-1/3}$ and $(N-Z)/A$, does describe such features. However, in its original formulation the droplet model was very inaccurate for nuclei far from stability and also failed catastrophically[31] to reproduce fission barriers of medium-

mass nuclei. These deficiencies led Myers to suggest that the surface-energy terms of the droplet model also be generalized to account for the finite range of the nuclear force. Thus, the Yukawa-plus-exponential model for the surface tension was incorporated into the droplet model. During this work it also became apparent that the description of nuclear compressibility was unsatisfactory, since the squeezing of the central density of light nuclei was overpredicted. The deficiency was serious because it starts to become important already at about $A = 120$ and becomes even more pronounced for lighter nuclei. To account for compressibility effects for light nuclei and for other higher-order effects an empirical exponential term was added.[4,5]

The additions of the finite-range surface-energy effects and exponential term to the droplet model[5] resulted in dramatic improvements in its predictive properties, as summarized in the discussion of Table A in Ref. 4. Mass calculations based on both the FRLDM[3] and the FRDM[4] were presented in the 1988 review of mass models in *Atomic Data and Nuclear Data Tables*. These calculations also used an improved pairing model relative to that used in the 1981 work. In the 1988 results the error in the FRDM was 8% lower than that in the FRLDM.

However, there were two major unresolved issues in the 1988 calculations. First, there existed some deficiencies in the pairing model and the values of the constants that were used. Second, ϵ_3 and ϵ_6 shape degrees of freedom were still not included, so deviations between calculated and measured masses due to the omission of these shape degrees of freedom were still present. Extensive investigations of pairing models and their constants have now been completed and resulted in an improved formulation of the pairing model.[9] We have now also minimized the potential energy with respect to ϵ_3 and ϵ_6 shape degrees of freedom. An overview of the results has been given in a paper on Coulomb-redistribution effects.[10] The FRDM, which includes Coulomb-redistribution effects, is now our preferred nuclear mass model.

Although the FRDM is now our preferred model, we also present results for the FRLDM for comparative purposes and for use in studies that assume constant nuclear density. We therefore specify below both models. Because several of the model constants are determined by least-squares minimization of the model error, we start by defining model error.

2.1. Model Error and Adjustment Procedure

In many studies the model error has been defined as simply the root-mean-square (rms) deviation, which as usual is given by

$$\text{rms} = \left[\frac{1}{n}\sum_{i=1}^{n}(M^i_{\text{exp}} - M^i_{\text{th}})^2\right]^{1/2}. \qquad (4)$$

Here M^i_{th} is the calculated mass for a particular value of the proton number Z and neutron number N, and M^i_{exp} is the corresponding measured quantity. There are n such measurements for different N and Z. The choice (4) is a reasonable definition when all the errors σ^i_{exp} associated with the measurements are small compared to the model error. However, for large σ^i_{exp} the above definition is unsatisfactory, since both the theoretical and the experimental errors contribute to the rms deviation. Definition (4) will therefore always overestimate the intrinsic model error.

When the experimental errors are large, it is necessary to use an approach that "decouples" the theoretical and experimental errors from one another. This can be accomplished by observing that the calculated masses are distributed around the *true* masses with a standard deviation σ_{th}. There exist powerful statistical methods for determining the intrinsic model error σ_{th}. The model error obtained in this way contains no contributions from the experimental uncertainties σ^i_{exp}. To introduce such an error concept a new set of equations for determining model parameters and error was derived[3] by use of statistical arguments and the maximum-likelihood (ML) method. Here we generalize from the original assumption[3] $e^i_{\text{th}} \in N(0, \sigma_{\text{th}})$ that the theoretical error term e^i_{th} is normally distributed with zero mean deviation from the true mass to $e^i_{\text{th}} \in N(\mu_{\text{th}}, \sigma_{\text{th}})$ to allow for an error with a mean μ_{th} that is different from zero and a standard deviation σ_{th} around this mean.[12] This leads to the generalized equations

$$\sum_{i=1}^{n}\frac{[M^i_{\text{exp}} - (M^i_{\text{th}} + \mu_{\text{th}}{}^*)]}{\sigma^i_{\text{exp}}{}^2 + \sigma_{\text{th}}{}^{2*}}\frac{\partial M^i_{\text{th}}}{\partial p_\nu} = 0,$$

$$\nu = 1, 2, \ldots, m \qquad (5)$$

$$\sum_{i=1}^{n}\frac{[M^i_{\text{exp}} - (M^i_{\text{th}} + \mu_{\text{th}}{}^*)]^2 - (\sigma^i_{\text{exp}}{}^2 + \sigma_{\text{th}}{}^{2*})}{(\sigma^i_{\text{exp}}{}^2 + \sigma_{\text{th}}{}^{2*})^2} = 0 \qquad (6)$$

$$\sum_{i=1}^{n}\frac{[M^i_{\text{exp}} - (M^i_{\text{th}} + \mu_{\text{th}}{}^*)]}{(\sigma^i_{\text{exp}}{}^2 + \sigma_{\text{th}}{}^{2*})} = 0, \qquad (7)$$

where p_ν are the unknown parameters of the model. The notation $\sigma_{\text{th}}{}^{2*}$ means that by solving Eqs. (6) and (7) we obtain the estimate $\sigma_{\text{th}}{}^{2*}$ of the true $\sigma_{\text{th}}{}^2$. Equation (5) is equivalent to minimizing S with respect to p_ν, where

$$S = \sum_{i=1}^{n}\frac{[M^i_{\text{exp}} - (M^i_{\text{th}} + \mu_{\text{th}}{}^*)]^2}{\sigma^i_{\text{exp}}{}^2 + \sigma_{\text{th}}{}^{2*}}. \qquad (8)$$

Thus, we are led to two additional equations relative to the usual least-squares equations that arise when model parameters are estimated by adjustments to experimental data under the assumption of a perfect theory with $\sigma_{\text{th}} = 0$ and $\mu_{\text{th}} = 0$. For the FRLDM the least-squares equations (5) are linear, whereas for the FRDM they are nonlinear.

When the model contains a term a_0A^0 that is strictly constant, Eq. (7) is identical to the member in Eq. (5) that corresponds to the derivative with respect to this constant. Thus, in this case one should set $\mu_{th}^* = 0$ and solve only the remaining $m + 1$ equations. In this case one may therefore characterize the error of the model in the region where the parameters were adjusted solely by the quantity σ_{th}. In other cases one should solve the full set of equations. If μ_{th}^* is significantly different from zero the theory needs modification. Even if $\mu_{th} = 0$ in the original data region, it is entirely possible (although undesirable) that one obtains a mean error μ_{th}^* that is substantially different from zero when one analyzes model results for new data points to which the parameters were not adjusted. In this case the most complete characterization of the theoretical error requires both its mean μ_{th} and its standard deviation σ_{th} around this mean.

To allow for a single error measure that is similar to an rms deviation between the data and the model we later also calculate the square root of the second central moment of the error term, $\sigma_{th;\mu=0}$, in our studies of model behavior in new regions of nuclei. This quantity is obtained by setting $\mu_{th}^* = 0$ when solving Eq. (6). In contrast to the rms measure, it has the advantage that it has no contributions from the experimental errors.

Equations (5)–(7) constitute a system of $m + 2$ equations that are to be solved together. It is instructive to rewrite Eqs. (6) and (7) as

$$\sigma_{th}^{2*} = \frac{1}{\sum_{i=1}^{n} w_i^{k_\sigma}} \times \sum_{i=1}^{n} w_i^{k_\sigma}[(M_{exp}^i - M_{th}^i - \mu_{th}^*)^2 - \sigma_{exp}^{i\,2}] \quad (9)$$

$$\mu_{th}^* = \frac{1}{\sum_{i=1}^{n} w_i^{k_\mu}} \sum_{i=1}^{n} w_i^{k_\mu}[(M_{exp}^i - M_{th}^i)], \quad (10)$$

where

$$w_i^k = \frac{1}{(\sigma_{exp}^{i\,2} + \sigma_{th}^{2*})^k} \quad (11)$$

$$k_\sigma = 2 \quad (12)$$

$$k_\mu = 1. \quad (13)$$

The unknowns μ_{th}^* and σ_{th}^{2*} can easily be determined from Eqs. (9) and (10) by an iterative procedure whose convergence is extremely rapid, requiring only about four iterations. An *interpretation*, not a proof, of Eq. (9) is that the experimental error is "subtracted out" from the difference between the experimental and the calculated masses.

A common misconception is that one has to "throw away" data points that have errors that are equal to or larger than the error of the model whose parameters are determined. When a proper statistical approach, such as the one above, is used, this is no longer necessary.

We will see below that the discrepancy between our mass calculations and measured masses systematically increases as the size of the nuclear system decreases. It is therefore of interest to consider that the mass-model error is a function of mass number A. A simple function to investigate is

$$\sigma_{th} = \frac{c}{A^\alpha}, \quad (14)$$

where c and α are two parameters to be determined. Whereas under the assumption of a constant model error one determines this single error constant from Eq. (9), we find that the ML method for the error assumption in Eq. (14), with two unknowns, and assuming $\mu_{th} = 0$, yields the equations

$$\sum_{i=1}^{n} \frac{(M_{exp}^i - M_{th}^i)^2 - [\sigma_{exp}^{i\,2} + (c^*/A_i^{\alpha*})^2]}{[\sigma_{exp}^{i\,2} + (c^*/A_i^{\alpha*})^2]^2 A_i^{\alpha*}} = 0 \quad (15)$$

$$\sum_{i=1}^{n} \frac{(M_{exp}^i - M_{th}^i)^2 - [\sigma_{exp}^{i\,2} + (c^*/A_i^{\alpha*})^2]}{[\sigma_{exp}^{i\,2} + (c^*/A_i^{\alpha*})^2]^2 A_i^{\alpha*+1}} = 0. \quad (16)$$

These equations are considerably more complicated to solve than Eq. (9). We solve them by minimizing the sum of the squares of the left members of Eqs. (15) and (16).

2.2. Shape Parameterizations

The original parameterization of the folded-Yukawa single-particle model was the three-quadratic-surface parameterization.[29,32] It was designed to allow great flexibility in describing shapes late in the fission process. However, it is less suitable for describing ground-state shapes.

To allow a better description of ground-state shapes and to allow close comparison with results of Nilsson modified-oscillator calculations, we incorporated the Nilsson perturbed-spheroid parameterization, or ϵ parameterization, in the folded-Yukawa single-particle computer code in 1973.[30,33,34]

In our work here we use the ϵ parameterization for all calculations related to ground-state properties. In our adjustment of macroscopic constants we also include 28 outer saddle-point heights of fission barriers. The shapes of these saddle points were obtained in a three-parameter calculation in the three-quadratic-surface parameterization in 1973.[33]

2.2.1. Perturbed-Spheroid Parameterization

The ϵ parameterization was originally used by Nilsson[35] in the modified-oscillator single-particle potential. It was introduced to limit the dimensions of the ma-

trices from which the single-particle energies and wave functions are obtained by diagonalization. This requirement leads to somewhat complex expressions for the nuclear shape. Here we employ its extension to higher-multipole distortions. For completeness we define it with axially asymmetric shapes[36-38] included, although this symmetry-breaking shape degree of freedom has not yet been implemented in the folded-Yukawa single-particle model. Note that a factor $\frac{1}{2}\sqrt{4\pi/9}$ is missing in front of the $Y_4(\gamma)$ function in Eq. (3) of Ref. 38.

As the first step in defining the ϵ parameterization a "stretched" representation is introduced. The stretched coordinates ξ, η, and ζ are defined by

$$\xi = \left\{\frac{m\omega_0}{\hbar}\left[1 - \frac{2}{3}\epsilon_2\cos\left(\gamma + \frac{2}{3}\pi\right)\right]\right\}^{1/2} x$$

$$\eta = \left\{\frac{m\omega_0}{\hbar}\left[1 - \frac{2}{3}\epsilon_2\cos\left(\gamma - \frac{2}{3}\pi\right)\right]\right\}^{1/2} y$$

$$\zeta = \left\{\frac{m\omega_0}{\hbar}\left[1 - \frac{2}{3}\epsilon_2\cos\gamma\right]\right\}^{1/2} z, \qquad (17)$$

where $\hbar\omega_0$ is the oscillator energy, ϵ_2 is the ellipsoidal deformation parameter, and γ is the nonaxiality angle. It is then convenient to define a stretched radius vector ρ_t by

$$\rho_t = (\xi^2 + \eta^2 + \zeta^2)^{1/2}, \qquad (18)$$

a stretched polar angle θ_t by

$$u = \cos\theta_t = \frac{\zeta}{\rho_t}$$

$$= \left[\frac{1 - \frac{2}{3}\epsilon_2\cos\gamma}{1 - \frac{1}{3}\epsilon_2\cos\gamma(3\cos^2\theta - 1) + (\frac{1}{3})^{1/2}\epsilon_2\sin\gamma\sin^2\theta\cos 2\phi}\right]^{1/2}\cos\theta, \qquad (19)$$

and a stretched azimuthal angle ϕ_t by

$$v = \cos 2\phi_t = \frac{2\eta}{(\xi^2 + \eta^2)^{1/2}}$$

$$= \frac{[1 + \frac{1}{3}\epsilon_2\cos\gamma]\cos 2\phi + (\frac{1}{3})^{1/2}\epsilon_2\sin\gamma}{1 + \frac{1}{3}\epsilon_2\cos\gamma + (\frac{1}{3})^{1/2}\epsilon_2\sin\gamma\cos 2\phi}. \qquad (20)$$

In the folded-Yukawa model the single-particle potential is very different from that in the Nilsson modified-oscillator model. However, the definition of the ϵ parameterization will be most clear if we follow the steps in the Nilsson model. The implementation in the folded-Yukawa model will then be simple. The Nilsson modified-oscillator potential is defined by

$$V = \tfrac{1}{2}\hbar\omega_0\rho_t^2\{1 + 2\epsilon_1 P_1(\cos\theta_t) - \tfrac{2}{3}\epsilon_2\cos\gamma P_2(\cos\theta_t) + \tfrac{1}{3}\epsilon_2\sin\gamma(\tfrac{8}{5}\pi)^{1/2}[Y_2^2(\theta_t, \phi_t) + Y_2^{-2}(\theta_t, \phi_t)] + 2\epsilon_3 P_3(\cos\theta_t) + 2\epsilon_4 V_4(\cos\theta_t, \cos 2\phi_t) + 2\epsilon_5 P_5(\cos\theta_t) + 2\epsilon_6 P_6(\cos\theta_t)\} - \kappa\hbar\mathring{\omega}_0[2\mathbf{l}_t\cdot\mathbf{s} + \mu(\mathbf{l}_t^2 - \langle\mathbf{l}_t^2\rangle)], \qquad (21)$$

where $\mathbf{l}_t$ is the angular-momentum operator in the stretched coordinate system, $\mathbf{s}$ is the spin operator,[35] and

$$V_4(u, v) = a_{40}P_4 + \sqrt{\frac{4\pi}{9}}[a_{42}(Y_4^2 + Y_4^{-2}) + a_{44}(Y_4^4 + Y_4^{-4})]. \qquad (22)$$

Here the hexadecapole potential $V_4(u, v)$ is made dependent on γ in such a way that axial symmetry is maintained when $\gamma = 0, 60°, -120°$, and $-60°$, for mass-symmetric shapes and for $\epsilon_6 = 0$. This is accomplished by choosing the coefficients a_{4i} so that they have the transformation properties of a hexadecapole tensor. However, this is achieved only for mass-symmetric shapes and for $\epsilon_6 = 0$. The ϵ parameterization has not been generalized to a more general case. Thus[38]

$$a_{40} = \tfrac{1}{6}(5\cos^2\gamma + 1)$$

$$a_{42} = -\tfrac{1}{12}\sqrt{30}\sin 2\gamma$$

$$a_{44} = \tfrac{1}{12}\sqrt{70}\sin^2\gamma. \qquad (23)$$

It is customary to now assume that the shape of the nuclear surface is equal to the shape of an equipotential surface given by Eq. (21). By neglecting the $\mathbf{l}_t\cdot\mathbf{s}$ and $\mathbf{l}_t^2$ terms, solving for ρ_t, and then using Eqs. (17)–(20) to derive an expression for r in the nonstretched laboratory system we obtain

$$r(\theta, \phi) = \frac{R_0}{\omega_0/\mathring{\omega}_0}\left\{\left[1 - \frac{2}{3}\epsilon_2\cos\left(\gamma + \frac{2}{3}\pi\right)\right]\left[1 - \frac{2}{3}\epsilon_2\cos\left(\gamma - \frac{2}{3}\pi\right)\right]\left[1 - \frac{2}{3}\epsilon_2\cos\gamma\right]\right\}^{-1/2}$$
$$\times\left[1 - \frac{1}{3}\epsilon_2\cos\gamma - \frac{2}{9}\epsilon_2^2\cos^2\gamma + \epsilon_2\left(\cos\gamma + \frac{1}{3}\epsilon_2\cos 2\gamma\right)u^2 - \left(\frac{1}{3}\right)^{1/2}\epsilon_2\sin\gamma\left(1 - \frac{2}{3}\epsilon_2\cos\gamma\right)(1 - u^2)v\right]^{1/2}$$
$$\times\left[1 - \frac{2}{3}\epsilon_2\cos\gamma\,\frac{1}{2}(3u^2 - 1) + \left(\frac{1}{3}\right)^{1/2}\epsilon_2\sin\gamma(1 - u^2)v + 2\epsilon_1 P_1(u) + 2\epsilon_3 P_3(u) + 2\epsilon_4 V_4(u, v) + 2\epsilon_5 P_5(u) + 2\epsilon_6 P_6(u)\right]^{-1/2}. \qquad (24)$$

In the Nilsson model the starting point is to define the potential. After the potential has been generated the shape of the nuclear surface is deduced by the above argument. In the folded-Yukawa model the starting point is different. There, the equation for the nuclear surface, given by Eq. (24) in the case of the ϵ parameterization, is specified in the initial step. Once the shape of the surface is known, the single-particle potential may be generated as described in later sections.

The quantity $\omega_0/\mathring{\omega}_0$ is determined by requiring that the volume remain constant with deformation, which gives

$$\left(\frac{\omega_0}{\mathring{\omega}_0}\right)^3 = \frac{1}{4\pi}\left\{\left[1-\frac{2}{3}\epsilon_2\cos\left(\gamma+\frac{2}{3}\pi\right)\right]\times\left[1-\frac{2}{3}\epsilon_2\cos\left(\gamma-\frac{2}{3}\pi\right)\right]\left[1-\frac{2}{3}\epsilon_2\cos\gamma\right]\right\}^{1/2}\times\int_0^{\pi}d\theta_t\int_0^{2\pi}d\phi_t\sin\theta_t\left[1-\frac{2}{3}\epsilon_2\cos\gamma P_2(u)+\epsilon_2\sin\gamma\left(\frac{8\pi}{45}\right)^{1/2}(Y_2^2+Y_{-2}^2)+2\epsilon_1P_1(u)+2\epsilon_3P_3(u)+2\epsilon_4P_4(u,v)+2\epsilon_5P_5(u)+2\epsilon_6P_6(u)\right]^{3/2}. \quad (25)$$

The above equation is derived by determining the volume inside the nuclear surface given by Eq. (24), with the integral $\int d^3r$ inside the surface evaluated in terms of the "nonstretched" coordinates θ and ϕ. After a variable substitution one arrives at the expression in Eq. (25).

The Legendre polynomials P_l occurring in the definitions of the ϵ parameterization are defined by

$$P_l(u) = \frac{1}{2^l l!}\frac{d^l}{du^l}(u^2-1)^l, \quad l = 0, 1, 2, \ldots, \infty. \quad (26)$$

The first six Legendre polynomials are

$$\begin{aligned}
P_0(u) &= 1\\
P_1(u) &= u\\
P_2(u) &= \tfrac{1}{2}(3u^2-1)\\
P_3(u) &= \tfrac{1}{2}(5u^3-3u)\\
P_4(u) &= \tfrac{1}{8}(35u^4-30u^2+3)\\
P_5(u) &= \tfrac{1}{8}(63u^5-70u^3+15u)\\
P_6(u) &= \tfrac{1}{16}(231u^6-315u^4+105u^2-5). \quad (27)
\end{aligned}$$

The associated Legendre functions P_l^m are defined by

$$P_l^m(u) = \frac{(1-u^2)^{m/2}}{2^l l!}\frac{d^{l+m}}{du^{l+m}}(u^2-1)^l, \quad l = 0, 1, 2, \ldots, \infty,\ m = 0, 1, 2, \ldots, l. \quad (28)$$

The spherical harmonics are then determined from the relations

$$Y_l^m(\theta,\phi) = (-)^m\left[\frac{(2l+1)}{4\pi}\frac{(l-m)!}{(l+m)!}\right]^{1/2}P_l^m(\cos\theta)e^{im\phi}, \quad m \geq 0 \quad (29)$$

$$Y_l^{m*}(\theta,\phi) = (-)^m Y_l^{-m}(\theta,\phi), \quad (30)$$

which yield for the functions used here

$$\begin{aligned}
Y_2^2(\theta,\phi) &= \sqrt{\frac{15}{32\pi}}\sin^2\theta e^{2i\phi}\\
Y_{-2}^2(\theta,\phi) &= \sqrt{\frac{15}{32\pi}}\sin^2\theta e^{-2i\phi}\\
Y_4^4(\theta,\phi) &= \sqrt{\frac{315}{512\pi}}\sin^4\theta e^{4i\phi}\\
Y_{-4}^4(\theta,\phi) &= \sqrt{\frac{315}{512\pi}}\sin^4\theta e^{-4i\phi}\\
Y_4^2(\theta,\phi) &= \sqrt{\frac{45}{128\pi}}\sin^2\theta(7\cos^2\theta-1)e^{2i\phi}\\
Y_{-4}^2(\theta,\phi) &= \sqrt{\frac{45}{128\pi}}\sin^2\theta(7\cos^2\theta-1)e^{-2i\phi}. \quad (31)
\end{aligned}$$

The sums

$$\begin{aligned}
SY_{22} &= Y_2^2(\theta,\phi)+Y_{-2}^2(\theta,\phi)\\
SY_{44} &= Y_4^4(\theta,\phi)+Y_{-4}^4(\theta,\phi)\\
SY_{42} &= Y_4^2(\theta,\phi)+Y_{-4}^2(\theta,\phi) \quad (32)
\end{aligned}$$

are required in the expression for the single-particle potential and in the corresponding equation for the nuclear surface. When the arguments of the spherical harmonics are the stretched angles θ_t and ϕ_t we obtain

$$SY_{22} = \sqrt{\frac{15}{8\pi}}\sin^2\theta_t\cos 2\phi_t = \sqrt{\frac{15}{8\pi}}(1-u^2)v$$

$$SY_{44} = \sqrt{\frac{315}{128\pi}}\sin^4\theta_t\cos 4\phi_t$$

$$= \sqrt{\frac{15}{128\pi}}(1-u^2)^2(2v^2-1)$$

$$SY_{42} = \sqrt{\frac{45}{32\pi}}\sin^2\theta_t(7\cos^2\theta_t - 1)\cos 2\phi_t$$

$$= \sqrt{\frac{45}{32\pi}}(1-u^2)(7u^2-1)v. \qquad (33)$$

2.2.2. *Three-Quadratic-Surface Parameterization*

In the three-quadratic-surface parameterization the shape of the nuclear surface is defined in terms of three smoothly joined portions of quadratic surfaces of revolution. They are completely specified by[32]

$$\rho^2 = \begin{cases} a_1^2 - \frac{a_1^2}{c_1^2}(z-l_1)^2, & l_1 - c_1 \le z \le z_1 \\ a_2^2 - \frac{a_2^2}{c_2^2}(z-l_2)^2, & z_2 \le z \le l_2 + c_2 \\ a_3^2 - \frac{a_3^2}{c_3^2}(z-l_3)^2, & z_1 \le z \le z_2. \end{cases} \qquad (34)$$

Here the left-hand surface is denoted by the subscript 1, the right-hand one by 2, and the middle one by 3. Each surface is specified by the position l_i of its center, its transverse semiaxis a_i, and its semisymmetry axis c_i. At the left and right intersections of the middle surface with the end surfaces the value of z is z_1 and z_2, respectively.

There are nine numbers required to specify the expressions in Eq. (34), but three numbers are eliminated by the conditions of constancy of the volume and continuous first derivatives at z_1 and z_2. The introduction of an auxiliary unit of distance u through

$$u = [\tfrac{1}{2}(a_1^2 + a_2^2)]^{1/2} \qquad (35)$$

permits a natural definition of two sets of shape coordinates. We define three mass-symmetric coordinates σ_i and three mass-asymmetric coordinates α_i by

$$\sigma_1 = \frac{(l_2 - l_1)}{u}$$

$$\sigma_2 = \frac{a_3^2}{c_3^2}$$

$$\sigma_3 = \frac{1}{2}\left(\frac{a_1^2}{c_1^2} + \frac{a_2^2}{c_2^2}\right)$$

$$\alpha_1 = \frac{1}{2}\frac{(l_1 + l_2)}{u}$$

$$\alpha_2 = \frac{(a_1^2 - a_2^2)}{u^2}$$

$$\alpha_3 = \frac{a_1^2}{c_1^2} - \frac{a_2^2}{c_2^2}. \qquad (36)$$

The coordinate α_1 is not varied freely but is instead determined by the requirement that the center of mass be at the origin.

2.2.3. *Conversion to β Parameters*

A common parameterization, which we do *not* use here, is the β parameterization. However, since we want to present some of our results in terms of β shape parameters, we introduce the parameterization and a scheme to express shapes generated in other parameterizations in terms of β deformation parameters. In the β parameterization the radius vector r is defined by

$$r(\theta, \phi) = R_0(1 + \sum_{l=1}^{\infty}\sum_{m=-l}^{l}\beta_{lm}Y_l^m), \qquad (37)$$

where R_0 is deformation dependent so as to conserve the volume inside the nuclear surface. When only axially symmetric shapes are considered the notation β_l is normally used for β_{l0}. Since the spherical harmonics Y_l^m are orthogonal, one may determine the β parameters corresponding to a specific shape in the ϵ parameterization by use of

$$\beta_{lm} = \sqrt{4\pi}\frac{\int r(\theta, \phi)Y_l^m(\theta, \phi)d\Omega}{\int r(\theta, \phi)Y_0^0(\theta, \phi)d\Omega}, \qquad (38)$$

where r is now the radius vector in the ϵ parameterization, given by Eq. (24). This conversion equation is in fact valid for a radius vector $r(\theta, \phi)$ defined by any parameterization.

When the β parameters corresponding to a specific shape in the ϵ parameterization are determined one should observe that higher-order β parameters may be nonzero even if higher-order ϵ parameters are identically zero. For this reason, and because β_5 is not tabulated, the nuclear ground-state shape is not completely specified by the β parameters in the Table, whereas the shape is completely defined by the ϵ parameters.

2.3. Finite-Range Droplet Model

The *finite-range droplet model*, developed in 1984,[5] combines the finite-range effects of the FRLDM[31,39,40] with the higher-order terms in the droplet model. In addition, the finite-range droplet model contains the new exponential term

$$-CAe^{-\gamma A^{1/3}}\epsilon, \qquad (39)$$

where C and γ specify the strength and range, respectively, of this contribution to the energy and the quantity $\bar{\epsilon}$ is a dilatation variable given by Eq. (49) below. The exponential term leads to an improved description of compressibility effects and is crucial to the substantially improved results obtained in the finite-range droplet model relative to the original droplet model. The necessity for this empirical exponential term, which is discussed extensively in Refs. 5 and 41, is clearly demonstrated in Refs. 5 and 41 and by the results obtained in Sec. 4.2.

Most of our results here are based on the finite-range droplet model for the macroscopic term. Relative to the formulation given in Ref. 5, which unfortunately has numerous misprints, we use a new model for the average neutron and proton pairing gaps. The complete expression for the contribution to the atomic mass excess from the FRDM macroscopic energy is obtained after minimization with respect to variations in $\bar{\epsilon}$ and $\bar{\delta}$, where $\bar{\delta}$ is the average bulk relative neutron excess given by Eq. (47). One then obtains

$$
\begin{aligned}
&E_{\mathrm{mac}}(Z, N, \text{shape}) = \\
&\quad M_{\mathrm{H}}Z + M_{\mathrm{n}}N && \text{mass excesses of } Z \text{ hydrogen atoms and } N \text{ neutrons} \\
&\quad + \left(-a_1 + J\bar{\delta}^2 - \frac{1}{2}K\bar{\epsilon}^2\right)A && \text{volume energy} \\
&\quad + \left(a_2 B_1 + \frac{9}{4}\frac{J^2}{Q}\bar{\delta}^2\frac{B_{\mathrm{s}}^2}{B_1}\right)A^{2/3} && \text{surface energy} \\
&\quad + a_3 A^{1/3} B_{\mathrm{k}} && \text{curvature energy} \\
&\quad + a_0 A^0 && A^0 \text{ energy} \\
&\quad + c_1 \frac{Z^2}{A^{1/3}} B_3 && \text{Coulomb energy} \\
&\quad - c_2 Z^2 A^{1/3} B_{\mathrm{r}} && \text{volume redistribution energy} \\
&\quad - c_4 \frac{Z^{4/3}}{A^{1/3}} && \text{Coulomb exchange correction} \\
&\quad - c_5 Z^2 \frac{B_{\mathrm{w}} B_{\mathrm{s}}}{B_1} && \text{surface redistribution energy} \\
&\quad + f_0 \frac{Z^2}{A} && \text{proton form-factor correction to the Coulomb energy} \\
&\quad - c_{\mathrm{a}}(N - Z) && \text{charge-asymmetry energy} \\
&\quad + W\left(|I| + \begin{cases} 1/A, & Z \text{ and } N \text{ odd and equal} \\ 0, & \text{otherwise} \end{cases}\right) && \text{Wigner energy} \\
&\quad + \begin{cases} \bar{\Delta}_{\mathrm{p}} + \bar{\Delta}_{\mathrm{n}} - \delta_{\mathrm{np}}, & Z \text{ and } N \text{ odd} \\ \bar{\Delta}_{\mathrm{p}}, & Z \text{ odd and } N \text{ even} \\ \bar{\Delta}_{\mathrm{n}}, & Z \text{ even and } N \text{ odd} \\ 0, & Z \text{ and } N \text{ even} \end{cases} && \text{average pairing energy} \\
&\quad - a_{\mathrm{el}} Z^{2.39} && \text{energy of bound electrons}
\end{aligned}
\tag{40}
$$

where $A = Z + N$ is the mass number and $I = (N - Z)/A$ is the relative neutron excess. This expression differs from the corresponding one used in our earlier calculations[5] only in the form of the average pairing energy appearing in the next-to-last term. One should note that after minimization the exponential term [Eq. (39)] is present only implicitly in Eq. (40) through its presence in Eq. (49) below. For the average neutron pairing gap $\bar{\Delta}_n$, average proton pairing gap $\bar{\Delta}_p$, and average neutron–proton interaction energy δ_{np} we now use[9,24,42]

$$\bar{\Delta}_n = \frac{r_{mac} B_s}{N^{1/3}} \tag{41}$$

$$\bar{\Delta}_p = \frac{r_{mac} B_s}{Z^{1/3}} \tag{42}$$

$$\delta_{np} = \frac{h}{B_s A^{2/3}}. \tag{43}$$

The zero reference point for the pairing energy now corresponds to even–even nuclei rather than to halfway between even–even and odd–odd nuclei.

The quantities c_1, c_2, c_4, and c_5 are defined by

$$c_1 = \frac{3}{5}\frac{e^2}{r_0}$$

$$c_2 = \frac{1}{336}\left(\frac{1}{J} + \frac{18}{K}\right) c_1^2$$

$$c_4 = \frac{5}{4}\left(\frac{3}{2\pi}\right)^{2/3} c_1$$

$$c_5 = \frac{1}{64Q} c_1^2. \tag{44}$$

In Eq. (40) we have kept only the first term in the expression for the proton form-factor correction to the Coulomb energy, so that f_0 is given by

$$f_0 = -\frac{1}{8}\left(\frac{145}{48}\right)\frac{r_p^2 e^2}{r_0^3}. \tag{45}$$

The bulk nuclear asymmetry δ is defined in terms of the neutron density ρ_n and proton density ρ_p by

$$\delta = \frac{\rho_n - \rho_p}{\rho_{bulk}}, \tag{46}$$

and the *average* bulk nuclear asymmetry is given by

$$\bar{\delta} = \left(I + \frac{3}{16}\frac{c_1}{Q}\frac{Z}{A^{2/3}}\frac{B_v B_s}{B_1}\right)\Big/\left(1 + \frac{9}{4}\frac{J}{Q}\frac{1}{A^{1/3}}\frac{B_s^2}{B_1}\right). \tag{47}$$

The relative deviation in the bulk of the density ρ from its nuclear matter value ρ_0 is defined by

$$\epsilon = -\frac{1}{3}\frac{\rho - \rho_0}{\rho_0}, \tag{48}$$

and the *average* relative deviation in the bulk of the density is given by

$$\bar{\epsilon} = \left(Ce^{-\gamma A^{1/3}} - 2a_2\frac{B_2}{A^{1/3}} + L\bar{\delta}^2 + c_1\frac{Z^2}{A^{4/3}}B_4\right)\Big/K. \tag{49}$$

The quantity B_1 is the relative generalized surface or nuclear energy in a model that accounts for the effect of the finite range of the nuclear force. It is given by

$$B_1 = \frac{A^{-2/3}}{8\pi^2 r_0^2 a^4}\int\int_{1'}\left(2 - \frac{|\mathbf{r} - \mathbf{r}'|}{a}\right) \times \frac{e^{-|\mathbf{r}-\mathbf{r}'|/a}}{|\mathbf{r} - \mathbf{r}'|/a} d^3r d^3r', \tag{50}$$

where the integration is over the specified sharp-surface deformed *generating* shape of volume V. Since the volume of the generating shape is conserved during deformation we have

$$V = \frac{4\pi}{3}R_0^3, \tag{51}$$

where R_0 is the radius of the spherical shape. The relative Coulomb energy B_3 is given by

$$B_3 = \frac{15}{32\pi^2}\frac{A^{-5/3}}{r_0^5}\int\int_{1'}\frac{d^3r d^3r'}{|\mathbf{r} - \mathbf{r}'|} \times \left[1 - \left(1 + \frac{1}{2}\frac{|\mathbf{r} - \mathbf{r}'|}{a_{den}}\right)e^{-|\mathbf{r}-\mathbf{r}'|/a_{den}}\right]. \tag{52}$$

The quantities B_1 and B_3 are evaluated for $R_0 = r_0 A^{1/3}$. However, in the finite-range droplet model the equilibrium value R_{den} of the equivalent-sharp-surface radius corresponding to the nuclear density is given by the expression

$$R_{den} = r_0 A^{1/3}(1 + \bar{\epsilon}). \tag{53}$$

Thus, the actual value of the nuclear radius is determined by the balance between Coulomb, compressibility, and surface-tension effects as expressed by Eq. (49). To calculate this balance it is necessary to know the response of the surface-energy and Coulomb-energy terms B_1 and B_3 to size changes. To account for this response we introduce the quantities B_2 and B_4, which are related to the derivatives of B_1 and B_3. These derivatives are evaluated numerically, and during this evaluation the radius R of the *generating* shape is varied around the value $r_0 A^{1/3}$.

The quantity B_2, which as mentioned above is related to the derivative of the relative generalized surface energy B_1, is defined by

$$B_2 = \frac{1}{2x_0}\left[\frac{d}{dx}(x^2 B_1)\right]_{x=x_0}, \tag{54}$$

with

$$x = \frac{R}{a} \quad \text{and} \quad x_0 = \frac{r_0 A^{1/3}}{a}. \tag{55}$$

The quantity B_4 is related to the derivative of the relative Coulomb energy B_3 and is defined by

$$B_4 = -y_0^2 \left[\frac{d}{dy} \left(\frac{B_3}{y} \right) \right]_{y=y_0}, \tag{56}$$

with

$$y = \frac{R}{a_{\text{den}}} \quad \text{and} \quad y_0 = \frac{r_0 A^{1/3}}{a_{\text{den}}}. \tag{57}$$

For spherical shapes the quantities B_1, B_2, B_3, and B_4 can be evaluated analytically. One obtains

$$B_1^{(0)} = 1 - \frac{3}{x_0^2} + (1 + x_0)\left(2 + \frac{3}{x_0} + \frac{3}{x_0^2}\right)e^{-2x_0}$$

$$B_2^{(0)} = 1 - (1 + 2x_0 - x_0^2)e^{-2x_0}$$

$$B_3^{(0)} = 1 - \frac{5}{y_0^2}\left[1 - \frac{15}{8y_0} + \frac{21}{8y_0^3} - \frac{3}{4}\left(1 + \frac{9}{2y_0} + \frac{7}{y_0^2} + \frac{7}{2y_0^3}\right)e^{-2y_0}\right]$$

$$B_4^{(0)} = 1 + 5\left[-\frac{3}{y_0^2} + \frac{15}{2y_0^3} - \frac{63}{4y_0^5} + \frac{3}{4}\left(\frac{2}{y_0} + \frac{12}{y_0^2} + \frac{32}{y_0^3} + \frac{42}{y_0^4} + \frac{21}{y_0^5}\right)e^{-2y_0}\right]. \tag{58}$$

The expression B_3 for the relative Coulomb energy yields the energy for an arbitrarily shaped, homogeneously charged, diffuse-surface nucleus to all orders in the diffuseness constant a_{den}. The constants in front of the integrals for B_1 and B_3 are chosen so that B_1 and B_3 are 1 for a sphere in the limit in which the range constant a and the diffuseness constant a_{den} are zero, in analogy with the definition of the quantities B_s and B_C in the standard liquid-drop and droplet models. The quantities B_2 and B_4, which are related to the derivatives of B_1 and B_3, respectively, were introduced above to treat the response of the nucleus to a change in size, resulting from a finite compressibility. The shape-dependent quantities B_s, B_v, B_w, B_k, and B_r, which are defined[7] in the standard droplet model, are given by

$$B_s = \frac{A^{-2/3}}{4\pi r_0^2} \int_S dS \qquad \text{surface energy}$$

$$B_v = -\frac{15A^{-4/3}}{16\pi^2 r_0^4} \int_S \tilde{W}(\mathbf{r})\, dS \qquad \text{neutron skin energy}$$

$$B_w = \frac{225A^{-2}}{64\pi^3 r_0^6} \int_S [\tilde{W}(\mathbf{r})]^2 dS \qquad \text{surface redistribution energy}$$

$$B_k = \frac{A^{-1/3}}{8\pi r_0} \int_S \left(\frac{1}{R_1} + \frac{1}{R_2}\right) dS \qquad \text{curvature energy}$$

$$B_r = \frac{1575A^{-7/3}}{64\pi^3 r_0^7} \int_V [\tilde{W}(\mathbf{r})]^2 d^3r \qquad \text{volume redistribution energy} \tag{59}$$

where

$$W(\mathbf{r}) = \int_V \frac{1}{|\mathbf{r} - \mathbf{r}'|} d^3r'$$

$$\bar{W} = \frac{3A^{-1}}{4\pi r_0^3} \int_V W(\mathbf{r}) d^3r$$

$$\tilde{W}(\mathbf{r}) = W(\mathbf{r}) - \bar{W} \tag{60}$$

and R_1 and R_2 are the principal radii of curvature.

2.4. Values of FRDM Macroscopic-Model Constants

The constants appearing in the expression for the finite-range droplet macroscopic model fall into four categories. The first category, which represents fundamental constants, includes[1,2]

$M_H = 7.289034$ MeV	hydrogen-atom mass excess
$M_n = 8.071431$ MeV	neutron mass excess
$e^2 = 1.4399764$ MeV fm	electronic charge squared

One should note that for consistency we here use the same values for the fundamental constants as in our 1981 mass calculation.[1,2] Results of a more recent evaluation of the fundamental constants appear in Refs. 43 and 44.

The second category, which represents constants that have been determined from considerations other than nuclear masses, includes[1-4]

$a_{el} = 1.433 \times 10^{-5}$ MeV	electronic-binding constant
$K = 240$ MeV	nuclear compressibility constant
$r_p = 0.80$ fm	proton root-mean-square radius
$r_0 = 1.16$ fm	nuclear-radius constant
$a = 0.68$ fm	range of Yukawa-plus-exponential potential
$a_{den} = 0.70$ fm	range of Yukawa function used to generate nuclear charge distribution

The third category, representing those constants whose values were obtained from consideration of odd–even mass differences[9,24,42] and other mass-like quantities, are

$r_{mac} = 4.80$ MeV	average pairing-gap constant
$h = 6.6$ MeV	neutron–proton interaction constant
$W = 30$ MeV	Wigner constant
$L = 0$ MeV	density-symmetry constant
$a_3 = 0$ MeV	curvature-energy constant

It should be noted that the final calculated mass excess is strictly independent of the value used for r_{mac}. This constant affects only the division of the mass excess between a macroscopic part and the remaining microscopic correction. We will therefore not include r_{mac} when we later count the number of constants in our mass model. It is the pairing constant r_{mic} which enters the microscopic model that affects the mass excess. It will be discussed below.

Since $\mu_{th} = 0$ in our case, Eqs. (6) and (8) can be solved with the experimental data set of 1654 masses with $Z \geq 8$ and $N \geq 8$ (Ref. 45) and 28 fission-barrier heights to determine the remaining macroscopic constants and the error of our model. Because it is now clear that the measurements of the masses of $^{31-34}$Na that are listed in the 1989 midstream evaluation of Audi[45] are in error, we have made four revisions. For ^{31,32}Na we use early results of mass measurements at TOFI.[46] The final, slightly different values appear in Ref. 47. For ^{33}Na we use results of new measurements at GANIL.[48] The data point for ^{34}Na is excluded.

To present all the macroscopic model constants together we list them here but discuss their adjustment later. These constants are

$a_1 = 16.247$ MeV	volume-energy constant
$a_2 = 22.92$ MeV	surface-energy constant
$J = 32.73$ MeV	symmetry-energy constant
$Q = 29.21$ MeV	effective surface-stiffness constant
$a_0 = 0.0$ MeV	A^0 constant
$c_a = 0.436$ MeV	charge-asymmetry constant
$C = 60$ MeV	preexponential compressibility-term constant
$\gamma = 0.831$	exponential compressibility-term range constant

The pairing constant r_{mic} which enters the microscopic model is also determined in a least-squares minimization with the above 1654 masses, although no barrier heights were included in its determination. Once the value of r_{mic} had been determined the adjustment routines were run again, this time with barriers included, to yield the final values of the constants listed above. The value of r_{mic} will be given in the section on microscopic constants. The resulting error in the FRDM is $\sigma_{th} = 0.669$ MeV.

For completeness we also specify the mass–energy conversion factor used in the interim 1989 mass evaluation. In this evaluation the relation between atomic mass units and energy is given by[45]

$$1 \text{ u} = 931.5014 \text{ MeV}. \qquad (61)$$

Although a more recent value has been adopted,[43,44,49] it is the above value, consistent with the 1989 interim mass evaluation,[45] that should be used if our calculated mass excesses in MeV are converted to atomic mass units.

2.5. Finite-Range Liquid-Drop Model

In the present version of our model the contribution to the atomic mass excess from the FRLDM macroscopic energy is given by

$$E_{mac}^{FL}(Z, N, \text{shape}) =$$

$M_H Z + M_n N$	mass excesses of Z hydrogen atoms and N neutrons
$- a_v(1 - \kappa_v I^2)A$	volume energy
$+ a_s(1 - \kappa_s I^2)B_1 A^{2/3}$	surface energy
$+ a_0 A^0$	A^0 energy
$+ c_1 \frac{Z^2}{A^{1/3}} B_3$	Coulomb energy
$- c_4 \frac{Z^{4/3}}{A^{1/3}}$	Coulomb exchange correction

$$
\begin{aligned}
&+ f(k_F r_p)\frac{Z^2}{A} && \text{proton form-factor correction to the Coulomb energy}\\
&- c_a(N-Z) && \text{charge-asymmetry energy}\\
&+ W\left(|I| + \begin{cases} 1/A, & Z \text{ and } N \text{ odd and equal}\\ 0, & \text{otherwise}\end{cases}\right) && \text{Wigner energy}\\
&+ \begin{cases} \bar{\Delta}_p + \bar{\Delta}_n - \delta_{np}, & Z \text{ and } N \text{ odd}\\ \bar{\Delta}_p, & Z \text{ odd and } N \text{ even}\\ \bar{\Delta}_n, & Z \text{ even and } N \text{ odd}\\ 0, & Z \text{ and } N \text{ even}\end{cases} && \text{average pairing energy}\\
&- a_{el}Z^{2.39} && \text{energy of bound electrons}
\end{aligned}
\tag{62}
$$

This expression differs from the corresponding one used in our earlier calculations[1,2] only in the form of the average pairing energy appearing in the next-to-last term. For the average neutron pairing gap $\bar{\Delta}_n$, average proton pairing gap $\bar{\Delta}_p$, and average neutron–proton interaction energy δ_{np} we now use[9,24,42]

$$\bar{\Delta}_n = \frac{r_{mac}B_s}{N^{1/3}} \tag{63}$$

$$\bar{\Delta}_p = \frac{r_{mac}B_s}{Z^{1/3}} \tag{64}$$

$$\delta_{np} = \frac{h}{B_s A^{2/3}}. \tag{65}$$

The zero reference point for the pairing energy now corresponds to even–even nuclei rather than to halfway between even–even and odd–odd nuclei.

In the above expressions the quantities c_1 and c_4 are defined in terms of the electronic charge e and the nuclear-radius constant r_0 by

$$
\begin{aligned}
c_1 &= \frac{3}{5}\frac{e^2}{r_0}\\
c_4 &= \frac{5}{4}\left(\frac{3}{2\pi}\right)^{2/3} c_1.
\end{aligned}
\tag{66}
$$

The quantity f appearing in the proton form-factor correction to the Coulomb energy is given by

$$f(k_F r_p) = -\frac{1}{8}\frac{r_p{}^2 e^2}{r_0{}^3}\left[\frac{145}{48} - \frac{327}{2880}(k_F r_p)^2 + \frac{1527}{1{,}209{,}600}(k_F r_p)^4\right], \tag{67}$$

where the Fermi wave number is

$$k_F = \left(\frac{9\pi Z}{4A}\right)^{1/3}\frac{1}{r_0}. \tag{68}$$

The relative neutron excess I is

$$I = \frac{N-Z}{N+Z} = \frac{N-Z}{A}. \tag{69}$$

The relative surface energy B_s, which is the ratio of the surface area of the nucleus at the actual shape to the surface area of the nucleus at the spherical shape, is given by

$$B_s = \frac{A^{-2/3}}{4\pi r_0{}^2}\int_S dS. \tag{70}$$

The quantity B_1 is the relative generalized surface or nuclear energy in a model that accounts for the effect of the finite range of the nuclear force. It is given by

$$B_1 = \frac{A^{-2/3}}{8\pi^2 r_0{}^2 a^4}\int\int_{1'}\left(2 - \frac{|\mathbf{r}-\mathbf{r}'|}{a}\right) \times \frac{e^{-|\mathbf{r}-\mathbf{r}'|/a}}{|\mathbf{r}-\mathbf{r}'|/a} d^3r d^3r'. \tag{71}$$

The relative Coulomb energy B_3 is given by

$$B_3 = \frac{15}{32\pi^2}\frac{A^{-5/3}}{r_0{}^5}\int\int_{1'}\frac{d^3r d^3r'}{|\mathbf{r}-\mathbf{r}'|} \times \left[1 - \left(1 + \frac{1}{2}\frac{|\mathbf{r}-\mathbf{r}'|}{a_{den}}\right)e^{-|\mathbf{r}-\mathbf{r}'|/a_{den}}\right]. \tag{72}$$

For spherical shapes the quantities B_1 and B_3 can be evaluated analytically. With

$$x_0 = \frac{r_0 A^{1/3}}{a} \quad \text{and} \quad y_0 = \frac{r_0 A^{1/3}}{a_{den}} \tag{73}$$

one obtains

$$B_1^{(0)} = 1 - \frac{3}{x_0^2} + (1 + x_0)\left(2 + \frac{3}{x_0} + \frac{3}{x_0^2}\right)e^{-2x_0}$$

$$B_3^{(0)} = 1 - \frac{5}{y_0^2}\left[1 - \frac{15}{8y_0} + \frac{21}{8y_0^3} - \frac{3}{4}\left(1 + \frac{9}{2y_0} + \frac{7}{y_0^2} + \frac{7}{2y_0^3}\right)e^{-2y_0}\right]. \quad (74)$$

The expression B_3 for the relative Coulomb energy yields the energy for an arbitrarily shaped, homogeneously charged, diffuse-surface nucleus to all orders in the diffuseness constant a_{den}. The constants in front of the integrals for B_1 and B_3 have been chosen so that B_1 and B_3 are 1 for a sphere in the limit in which the range a and diffuseness a_{den} are zero, in analogy with the definition of the quantities B_s and B_C in the standard liquid-drop model.

2.6. Values of FRLDM Macroscopic-Model Constants

The constants appearing in the expression for the finite-range liquid-drop macroscopic model fall into four categories. The first category, which represents fundamental constants, includes[1,2]

$M_H = 7.289034$ MeV	hydrogen-atom mass excess
$M_n = 8.071431$ MeV	neutron mass excess
$e^2 = 1.4399764$ MeV fm	electronic charge squared

The second category, which represents constants that have been determined from considerations other than nuclear masses, includes[1,2]

$a_{el} = 1.433 \times 10^{-5}$ MeV	electronic-binding constant
$r_p = 0.80$ fm	proton root-mean-square radius
$r_0 = 1.16$ fm	nuclear-radius constant
$a = 0.68$ fm	range of Yukawa-plus-exponential potential
$a_{den} = 0.70$ fm	range of Yukawa function used to generate nuclear charge distribution

The third category, representing those constants whose values were obtained from consideration of odd–even mass differences[9,24,42] and other mass-like quantities, are

$r_{mac} = 4.80$ MeV	average pairing-gap constant
$h = 6.6$ MeV	neutron–proton interaction constant
$W = 30$ MeV	Wigner constant

It should be noted that the final calculated mass excess is strictly independent of the value used for r_{mac}. This constant affects only the division of the mass excess between the macroscopic part and the remaining microscopic correction. We therefore do not include r_{mac} when we later count the number of constants in our mass model. It is the pairing constant r_{mic} which enters the microscopic model that affects the mass excess. It will be discussed below.

Since $\mu_{th} = 0$ in our case, Eqs. (6) and (8) can be solved with the experimental data set of 1654 masses with $Z \geq 8$ and $N \geq 8$ (Ref. 45) and 28 fission-barrier heights to determine the remaining macroscopic constants and the error of our model. To present all the macroscopic model constants together we list them here but discuss their adjustment later. These constants are

$a_v = 16.00126$ MeV	volume-energy constant
$\kappa_v = 1.92240$ MeV	volume-asymmetry constant
$a_s = 21.18466$ MeV	surface-energy constant
$\kappa_s = 2.345$ MeV	surface-asymmetry constant
$a_0 = 2.615$ MeV	A^0 constant
$c_a = 0.10289$ MeV	charge-asymmetry constant

The resulting error in the FRLDM is $\sigma_{th} = 0.779$ MeV.

2.7. Microscopic Model

The shell-plus-pairing correction $E_{s+p}(Z, N, \text{shape})$ is the sum of the proton shell-plus-pairing correction and the neutron shell-plus-pairing correction, namely

$$E_{s+p}(Z, N, \text{shape}) = E_{s+p}^{prot}(Z, \text{shape}) + E_{s+p}^{neut}(N, \text{shape}). \quad (75)$$

We give here the equations for the neutron shell-plus-pairing correction. Completely analogous expressions hold for protons. We have

$$E_{s+p}^{neut}(N, \text{shape}) = E_{shell}^{neut}(N, \text{shape}) + E_{pair}^{neut}(N, \text{shape}). \quad (76)$$

Both terms are evaluated from a set of calculated single-particle levels. As before, the shell correction is calculated

by use of Strutinsky's method.[25,26] Thus

$$E_{\text{shell}}^{\text{neut}}(N, \text{shape}) = \sum_{i=1}^{N} e_i - \tilde{E}^{\text{neut}}(N, \text{shape}), \quad (77)$$

where e_i are calculated single-particle energies and $\tilde{E}^{\text{neut}}(N, \text{shape})$ is the smooth single-particle energy sum calculated in the Strutinsky method. The pairing correction is the difference between the pairing correlation energy and the average pairing correlation energy, namely

$$E_{\text{pair}}^{\text{neut}}(N, \text{shape}) = E_{\text{p.c.}}^{\text{neut}}(N, \text{shape}) - \tilde{E}_{\text{p.c.}}^{\text{neut}}(N, \text{shape}), \quad (78)$$

where $E_{\text{p.c.}}^{\text{neut}}(N, \text{shape})$ is given by Eq. (103) below and $\tilde{E}_{\text{p.c.}}^{\text{neut}}(N, \text{shape})$ is given by Eq. (110) below. For the pairing correction we now use the Lipkin–Nogami[21–23] version of the BCS method, which takes into account the lowest-order correction to the total energy of the system associated with particle-number fluctuation.

The single-particle potential felt by a nucleon is given by

$$V = V_1 + V_{\text{s.o.}} + V_{\text{C}}. \quad (79)$$

The first term is the spin-independent nuclear part of the potential, which is calculated in terms of the folded-Yukawa potential

$$V_1(\mathbf{r}) = -\frac{V_0}{4\pi {a_{\text{pot}}}^3} \int_{\mathbf{r}'} \frac{e^{-|\mathbf{r}-\mathbf{r}'|/a_{\text{pot}}}}{|\mathbf{r}-\mathbf{r}'|/a_{\text{pot}}} d^3r', \quad (80)$$

where the integration is over the volume of the generating shape, whose volume is held fixed at $\frac{4}{3}\pi {R_{\text{pot}}}^3$ as the shape is deformed. The potential radius R_{pot} is given by

$$R_{\text{pot}} = R_{\text{den}} + A_{\text{den}} - B_{\text{den}}/R_{\text{den}}, \quad (81)$$

with

$$R_{\text{den}} = r_0 A^{1/3}(1 + \bar{\epsilon}). \quad (82)$$

Values of the model constants A_{den} and B_{den} will be given later. The potential depth V_{p} for protons and potential depth V_{n} for neutrons are given by

$$V_{\text{p}} = V_{\text{s}} + V_{\text{a}}\bar{\delta} \quad (83)$$

$$V_{\text{n}} = V_{\text{s}} - V_{\text{a}}\bar{\delta}. \quad (84)$$

The average bulk nuclear asymmetry $\bar{\delta}$ appearing in Eqs. (83) and (84) and average relative deviation $\bar{\epsilon}$ in the bulk of the density appearing in Eq. (82) are given by the droplet model and thus depend on the values of the droplet-model constants. The FRDM macroscopic constants are determined in a nonlinear least-squares adjustment, which requires about 1000 steps to find the optimum constants. In principle, these constants should then be used in the determination of the single-particle potential, the potential-energy surfaces should be recalculated with the new constants, a new mass calculation should be performed, and a new set of macroscopic constants should be determined, with this iteration repeated until convergence. Because the calculation of potential-energy surfaces is extremely time-consuming, only one iteration has been performed.

Furthermore, in determining the single-particle potential we have used the following early forms[50] of the droplet-model expressions for $\bar{\delta}$ and $\bar{\epsilon}$:

$$\bar{\delta} = \left(I + \frac{3}{8}\frac{c_1}{Q}\frac{Z^2}{A^{5/3}}\right) \Big/ \left(1 + \frac{9}{4}\frac{J}{Q}\frac{1}{A^{1/3}}\right) \quad (85)$$

$$\bar{\epsilon} = \left(-\frac{2a_2}{A^{1/3}} + L\bar{\delta}^2 + c_1\frac{Z^2}{A^{4/3}}\right) \Big/ K. \quad (86)$$

The range

$$a_{\text{pot}} = 0.8 \text{ fm} \quad (87)$$

of the Yukawa function in Eq. (80) has been determined from an adjustment of calculated single-particle levels to experimental data in the rare-earth and actinide regions.[34] It is kept constant for nuclei throughout the periodic system.

The spin–orbit potential is given by the expression

$$V_{\text{s.o.}} = -\lambda\left(\frac{\hbar}{2m_{\text{nuc}}c}\right)^2 \frac{\boldsymbol{\sigma}\cdot\nabla V_1 \times \mathbf{p}}{\hbar}, \quad (88)$$

where λ is the spin–orbit interaction strength, m_{nuc} is the nucleon mass, $\boldsymbol{\sigma}$ represents the Pauli spin matrices, and $\mathbf{p}$ is the nucleon momentum.

The spin–orbit strength has been determined from adjustments to experimental levels in the rare-earth and actinide regions. It has been shown[1,14,34] that many nuclear properties throughout the periodic system are well reproduced with λ given by a function linear in A through the values determined in these two regions. This gives

$$\lambda_{\text{p}} = 6.0\left(\frac{A}{240}\right) + 28.0 = 0.025A + 28.0 = k_{\text{p}}A + l_{\text{p}} \quad (89)$$

for protons and

$$\lambda_{\text{n}} = 4.5\left(\frac{A}{240}\right) + 31.5 = 0.01875A + 31.5 = k_{\text{n}}A + l_{\text{n}} \quad (90)$$

for neutrons.

Finally, the Coulomb potential for protons is given by

$$V_{\text{C}}(\mathbf{r}) = e\rho_{\text{c}} \int_{\mathbf{r}'} \frac{d^3r'}{|\mathbf{r}-\mathbf{r}'|}, \quad (91)$$

where the charge density ρ_c is given by

$$\rho_c = \frac{Ze}{\frac{4}{3}\pi A r_0^3}. \quad (92)$$

The number of basis functions used in our calculations is

$$N_{bas} = 12. \quad (93)$$

The overall curvature of the basis functions is chosen to yield

$$\hbar\omega_0 = C_{cur}/A^{1/3}, \quad (94)$$

with

$$C_{cur} = 41 \text{ MeV}. \quad (95)$$

2.8. Microscopic Pairing Models

Because of its basic simplicity, the BCS pairing model[51-54] has been the pairing model of choice in most previous nuclear-structure calculations.[1,2,29,55] However, a well-known deficiency of the BCS model is that for large spacings between the single-particle levels at the Fermi surface, no nontrivial solutions exist. In practical applications, these situations occur not only at magic numbers, but also, for example, for deformed actinide nuclei at neutron numbers $N = 142$ and 152. By taking into account effects associated with particle-number fluctuations, the Lipkin–Nogami approximation[21-23] goes beyond the BCS approximation and avoids such collapses.

In solving the pairing equations for neutrons or protons in either the BCS or the Lipkin–Nogami model, we consider a constant pairing interaction G acting between $N_2 - N_1 + 1$ doubly degenerate single-particle levels, which are occupied by N_{int} nucleons. This interaction interval starts at level N_1, located below the Fermi surface, and ends at level N_2, located above the Fermi surface. With the definitions we use here, the levels are numbered consecutively starting with number 1 for the level at the bottom of the well. Thus, for even particle numbers, the last occupied levels in the neutron and proton wells are $N/2$ and $Z/2$, respectively.

The level pairs included in the pairing calculation are often chosen symmetrically around the Fermi surface. However, for spherical nuclei it is more reasonable to require that degenerate spherical states have equal occupation probability. This condition cannot generally be satisfied simultaneously with a symmetric choice of levels in the interaction region. We therefore derive the pairing equations below for the more general case of arbitrary N_1 and N_2.

In the Lipkin–Nogami pairing model[21-23] the pairing gap Δ, Fermi energy λ, number-fluctuation constant λ_2, occupation probabilities v_k^2, and shifted single-particle energies ϵ_k are determined from the $2(N_2 - N_1) + 5$ coupled nonlinear equations

$$N_{tot} = 2\sum_{k=N_1}^{N_2} v_k^2 + 2(N_1 - 1) \quad (96)$$

$$\frac{2}{G} = \sum_{k=N_1}^{N_2} \frac{1}{\sqrt{(\epsilon_k - \lambda)^2 + \Delta^2}} \quad (97)$$

$$v_k^2 = \frac{1}{2}\left[1 - \frac{\epsilon_k - \lambda}{\sqrt{(\epsilon_k - \lambda)^2 + \Delta^2}}\right], \quad k = N_1, N_1 + 1, \ldots, N_2 \quad (98)$$

$$\epsilon_k = e_k + (4\lambda_2 - G)v_k^2, \quad k = N_1, N_1 + 1, \ldots, N_2 \quad (99)$$

$$\lambda_2 = \frac{G}{4}\left[\frac{(\sum_{k=N_1}^{N_2} u_k^3 v_k)(\sum_{k=N_1}^{N_2} u_k v_k^3) - \sum_{k=N_1}^{N_2} u_k^4 v_k^4}{(\sum_{k=N_1}^{N_2} u_k^2 v_k^2)^2 - \sum_{k=N_1}^{N_2} u_k^4 v_k^4}\right], \quad (100)$$

where

$$u_k^2 = 1 - v_k^2, \quad k = N_1, N_1 + 1, \ldots, N_2. \quad (101)$$

The quasi-particle energies E_k of the odd nucleon in an odd-A nucleus are now given by[22]

$$E_k = [(\epsilon_k - \lambda)^2 + \Delta^2]^{1/2} + \lambda_2, \quad k = N_1, N_1 + 1, \ldots, N_2. \quad (102)$$

In the Lipkin–Nogami model it is the sum $\Delta + \lambda_2$ that is identified with odd–even mass differences.[22] We denote this sum by Δ_{LN}.

The pairing-correlation energy plus quasi-particle energy in the Lipkin–Nogami model is given by

$$E_{p.c.} = \sum_{k=N_1}^{N_2} (2v_k^2 - n_k)e_k - \frac{\Delta^2}{G} - \frac{G}{2}\sum_{k=N_1}^{N_2} (2v_k^4 - n_k) - 4\lambda_2 \sum_{k=N_1}^{N_2} u_k^2 v_k^2 + E_i \theta_{odd,N_{tot}}, \quad (103)$$

where e_k are the single-particle energies and n_k, with values 2, 1, or 0, specify the sharp distribution of particles in the absence of pairing. The quasi-particle energy E_i for the odd particle occupying level i is given by Eq. (102), and $\theta_{odd,N_{tot}}$ is unity if N_{tot} is odd and zero if N_{tot} is even.

2.9. Effective-Interaction Pairing-Gap Models

In microscopic pairing calculations the pairing strength G for neutrons and protons can be obtained from

effective-interaction pairing gaps Δ_{G_n} and Δ_{G_p} given by[9]

$$\Delta_{G_n} = \frac{r_{\rm mic} B_s}{N^{1/3}} \tag{104}$$

$$\Delta_{G_p} = \frac{r_{\rm mic} B_s}{Z^{1/3}}. \tag{105}$$

The dependence of the pairing strength G on the corresponding effective-interaction pairing gap Δ_G is obtained from the microscopic equations by assuming a constant level density for the average nucleus in the vicinity of the Fermi surface. This allows the sums in the equations to be replaced by integrals. The average level density of doubly degenerate levels is taken to be

$$\tilde{\rho} = \tfrac{1}{2}\tilde{g}(\tilde{\lambda}), \tag{106}$$

where $\tilde{g}$ is the smooth level density that is obtained in Strutinsky's shell-correction method and $\tilde{\lambda}$ is the Fermi energy of the smoothed single-particle energy.[29,56] Thus, we can make the substitution

$$\sum_{k=N_1}^{N_2} f(e_k - \lambda) \Rightarrow \tilde{\rho} \int_{y_1}^{y_2} f(x)dx, \tag{107}$$

where

$$y_1 = \frac{-\frac{1}{2}N_{\rm tot} + N_1 - 1}{\tilde{\rho}}$$

$$y_2 = \frac{-\frac{1}{2}N_{\rm tot} + N_2}{\tilde{\rho}}. \tag{108}$$

The gap equation (97) can now be evaluated for an *average* nucleus, with the result

$$\frac{1}{G} = \frac{1}{2}\tilde{\rho}\int_{y_1}^{y_2}\frac{dx}{\sqrt{x^2 + \Delta_G^2}} = \frac{1}{2}\tilde{\rho}\left[\ln\left(\sqrt{y_2^2 + \Delta_G^2} + y_2\right) - \ln\left(\sqrt{y_1^2 + \Delta_G^2} + y_1\right)\right]. \tag{109}$$

From this expression, the pairing strength G in the BCS model can be determined in any region of the nuclear chart.

The same expression may also be used in the Lipkin–Nogami case, but some reinterpretations are necessary. It is now the energies ϵ_k occurring in Eq. (97) that are assumed to be equally spaced. These are not precisely the single-particle energies e_k but are related to them by Eq. (99). Thus, in order for ϵ_k to be equally spaced, the single-particle energies e_k must be shifted downward by the amounts $(4\lambda_2 - G)v_k^2$. Since the occupation probability v_k^2 is approximately unity far below the Fermi surface and zero far above, the corresponding single-particle energy distribution is approximately uniform far above and far below the Fermi surface but spread apart by the additional amount $4\lambda_2 - G$ close to the Fermi surface. Although this decrease in level density near the Fermi surface is accidental, it is in approximate accord with the ground-state structure of real nuclei, since the increased stability associated with ground-state configurations is due to low level densities near the Fermi surface.[24,56]

In the Lipkin–Nogami (LN) model, it is the quantity $\Delta + \lambda_2$ that is associated with odd–even mass differences, whereas in the BCS model it is Δ only that should be directly compared to the experimental data. This leads to the expectation that there is a related difference between $\Delta_G^{\rm LN}$ and $\Delta_G^{\rm BCS}$, the effective-interaction pairing gaps associated with the LN and BCS models, respectively. Since we determine the constants of the model for $\Delta_G^{\rm LN}$ directly from least-squares minimization, it is not necessary to specify exactly such a relationship. However, the above observation is of value as a rough rule of thumb and to remind us to expect that the effective-interaction pairing gaps in the BCS and LN models are of somewhat different magnitude.

The expression for the *average* pairing correlation energy plus quasi-particle energy $\tilde{E}_{\rm p.c.}$ in the Lipkin–Nogami model is obtained in a similar manner as the expression for the pairing matrix element G. For the average pairing correlation energy plus quasi-particle energy in the Lipkin–Nogami model we then obtain

$$\begin{aligned}\tilde{E}_{\rm p.c.} = {} & \frac{1}{2}\tilde{\rho}\left[(y_2 - G)\left(y_2 - \sqrt{y_2^2 + \Delta_G^2}\right)\right. \\ & \left. + (y_1 - G)\left(y_1 + \sqrt{y_1^2 + \Delta_G^2}\right)\right] \\ & + \frac{1}{4}(G - 4\tilde{\lambda}_2)\tilde{\rho}\Delta_G\left[\tan^{-1}\left(\frac{y_2}{\Delta_G}\right) - \tan^{-1}\left(\frac{y_1}{\Delta_G}\right)\right] \\ & + \bar{\Delta}\theta_{{\rm odd},N_{\rm tot}},\end{aligned} \tag{110}$$

where the average pairing gap $\bar{\Delta}$ is given by Eqs. (41) and (42) or Eqs. (63) and (64).

The expression for $\tilde{\lambda}_2$ for an average nucleus is fairly lengthy. It is given by

$$\tilde{\lambda}_2 = \frac{G}{4}\left(\frac{A - C}{B - C}\right), \tag{111}$$

where

$$A = \left(\frac{\tilde{\rho}\Delta_G}{4}\right)^2\left\{\left(\frac{2}{G\tilde{\rho}}\right)^2 - \left[\ln\left(\frac{\sqrt{y_2^2 + \Delta_G^2}}{\sqrt{y_1^2 + \Delta_G^2}}\right)\right]^2\right\}$$

$$B = \frac{\Delta_G^2\tilde{\rho}^2}{16}\left[\tan^{-1}\left(\frac{y_2}{\Delta_G}\right) - \tan^{-1}\left(\frac{y_1}{\Delta_G}\right)\right]^2$$

$$\begin{aligned}C = {} & \frac{\tilde{\rho}\Delta_G}{32}\left[\Delta_G\left(\frac{y_2}{y_2^2 + \Delta_G^2} - \frac{y_1}{y_1^2 + \Delta_G^2}\right)\right. \\ & \left. + \tan^{-1}\left(\frac{y_2}{\Delta_G}\right) - \tan^{-1}\left(\frac{y_1}{\Delta_G}\right)\right].\end{aligned} \tag{112}$$

One should note that the pairing strength G depends on the interval (N_1, N_2) over which the pairing force is active. However, in our formulation we do not use G as a primary constant. Instead, we use the effective-interaction pairing gaps Δ_{G_n} and Δ_{G_p}, which are independent of the choice of interaction interval (N_1, N_2). We choose the pairing interaction interval so that at least all levels up to 5 MeV above the Fermi surface are included. It has sometimes been asked whether particles scattered into the continuum by the pairing force would escape from the nucleus if the interaction interval includes unbound states. Of course not! The superfluid state is the *most bound* configuration. The single-particle picture does not give the true nuclear ground or excited states; it only serves as the set of basis functions for the pairing calculation. Instead, the quasi-particle energies obtained in the pairing calculation represent a subset of all possible excited states. If, in an excited nucleus, the quasi-particle energies are lower than the particle separation energies, no nucleons escape.

2.10. Shell Correction

The Strutinsky shell-correction method[25,26] requires two additional constants, the order p and the range γ_S. The shell correction should be insensitive to these quantities within a certain range of values. Their values can therefore be determined in principle by requiring the plateau condition to be fulfilled. We have found that for heavy nuclei this condition is indeed fulfilled, with the shell correction for nuclear ground-state shapes insensitive to the values of these two constants. However, for light nuclei this is no longer the case. Here the shell correction may vary by several MeV for a reasonable range of values of the range γ_S. Moreover, the shell correction often does not exhibit any plateau. This probably indicates a gradual breakdown of the shell-correction method as one approaches the very lightest region of nuclei, where the number of single-particle levels is small.

In the present calculation we choose

$$p = 8 \tag{113}$$

for the order in the Strutinsky shell-correction method. The corresponding range γ_S is given by

$$\gamma_S = C_S \hbar\omega_0 B_s, \tag{114}$$

with

$$C_S = 1.0 \tag{115}$$

and B_s given by Eq. (70). This choice lowers the error of the mass model to 0.669 MeV from 0.734 MeV obtained with the same range coefficient but no dependence on surface area in a sixth-order correction.

The version of the Strutinsky method[25,26] that we use here was originally proposed for infinite single-particle wells. For finite wells the calculated shell correction diverges to $+\infty$ as the number of basis functions approaches $+\infty$. This difficulty is avoided by using only a limited number of basis functions. It has been found that the calculated shell correction is approximately independent of N_{bas} in the range $8 \leqslant N_{bas} \leqslant 13$ (Ref. 29).

One may expect the Strutinsky method to be less accurate for light nuclei than for heavy nuclei because the smooth, average quantities calculated in the Strutinsky method are less accurately determined from the few levels occurring in light nuclei. One could also ask if the method is less accurate near the drip lines than close to β stability because the truncated single-particle level spectrum that we use deviates more from a realistic single-particle spectrum near the drip lines than near β-stable nuclei. Below, where we study the reliability of the model for light nuclei and for nuclei far from β stability, we find that the model error does indeed grow as the size of the nuclear system decreases. However, we find no obvious increase in the model error for today's known nuclei that are the furthest from β stability. The reliability of the Strutinsky method for the folded-Yukawa single-particle potential is further discussed in the Appendix of Ref. 29.

2.11. Zero-Point Energy

As a final step in the calculation of nuclear ground-state masses a zero-point energy is added to the calculated potential energy at the ground-state shape. As mentioned above, we now add only a zero-point energy for the fission, or ϵ_2, mode. In the harmonic approximation this zero-point energy E_{zp} is given by

$$E_{zp} = \tfrac{1}{2}\hbar\omega_\epsilon, \tag{116}$$

where

$$\omega_\epsilon = (C_\epsilon/B_\epsilon)^{1/2}. \tag{117}$$

Here C_ϵ is the potential-energy stiffness constant and B_ϵ is the inertia associated with motion in the ϵ_2 direction. Details of their calculation are given in Ref. 1. The angular frequency ω_ϵ is related to that corresponding to irrotational flow by

$$\omega_\epsilon = \mathcal{K}\omega_\epsilon^{ir}. \tag{118}$$

The constant $\mathcal{K}$ has been previously determined by requiring that for a spherical shape the inertia B_ϵ equal the inertia determined from an adjustment to spontaneous-fission half-lives for actinide nuclei.[1,57]

2.12. Values of Microscopic-Model Constants

The constants appearing in the expressions occurring in the microscopic shell-plus-pairing calculation fall into four categories. The first category, which represents

fundamental constants, includes

$m_{nuc} = 938.90595$ MeV	nucleon mass
$\hbar c = 197.32891$ MeV fm	Planck's constant multiplied by the speed of light and divided by 2π
$e^2 = 1.4399764$ MeV fm	electronic charge squared

The electronic charge squared has already been counted among the macroscopic constants.

The second category, which represents constants that have been determined from considerations other than nuclear masses, includes[1,2,29]

$C_{cur} = 41$ MeV	basis curvature constant
$V_s = 52.5$ MeV	symmetric potential-depth constant
$V_a = 48.7$ MeV	asymmetric potential-depth constant
$A_{den} = 0.82$ fm	potential radius-correction constant
$B_{den} = 0.56$ fm^2	potential radius curvature-correction constant
$a_{pot} = 0.8$ fm	potential diffuseness constant
$k_p = 0.025$	proton spin–orbit A coefficient
$l_p = 28.0$	proton spin–orbit constant
$k_n = 0.01875$	neutron spin–orbit A coefficient
$l_n = 31.5$	neutron spin–orbit constant
$\mathcal{H} = 0.33$	zero-point-energy constant

The third category, representing those constants whose values were obtained from consideration of mass-like quantities, are

$N_{bas} = 12$	number of basis functions
$p = 8$	order of Strutinsky shell correction
$C_S = 1.0$	Strutinsky range coefficient

The fourth category, representing those constants whose values were obtained from a least-squares adjustment simultaneously with the macroscopic constants of the FRDM, includes only one microscopic constant, namely

$r_{mic} = 3.2$ MeV	LN effective-interaction pairing-gap constant

In addition, the following droplet-model constants, which have been determined in an earlier study,[50] are used in the expressions for the *average* bulk nuclear asymmetry $\bar{\delta}$ and *average* relative deviation $\bar{\epsilon}$ in the bulk density that are used to calculate V_p, V_n, and R_{den} in Eqs. (83), (84), and (82), respectively:

$a_2 = 22.00$ MeV	surface-energy constant
$J = 35$ MeV	symmetry-energy constant
$L = 99$ MeV	density-symmetry constant
$Q = 25$ MeV	effective surface-stiffness constant
$K = 300$ MeV	compressibility constant
$r_0 = 1.16$ fm	nuclear-radius constant

Insertion of these values and the value of e^2 on which c_1 depends in Eqs. (85) and (86) leads to

$$\bar{\delta} = \frac{(N-Z)/A + 0.0112Z^2/A^{5/3}}{1 + 3.15/A^{1/3}} \qquad (119)$$

$$\bar{\epsilon} = -\frac{0.147}{A^{1/3}} + 0.330\bar{\delta}^2 + \frac{0.00248Z^2}{A^{4/3}}. \qquad (120)$$

One could in principle carry through the iterations discussed above to obtain a consistent set of droplet-model constants for the macroscopic part and for the single-particle potential, but the required computational effort would be extensive. However, the value of r_0 is precisely the same as that used in the macroscopic model.

3. ENUMERATION OF CONSTANTS

It is always of interest to have a clear picture of exactly what constants enter a model. Naturally, anyone who sets out to verify a calculation by others or uses a model for new applications needs a complete specification of the model, for which a full specification of the constants and their values is an essential part. Also, when different models are compared it is highly valuable to fully understand exactly what constants enter the models. Unfortunately, discussions of model constants are often incomplete, misleading, and/or erroneous. For example, in Table A of Ref. 58 the number of parameters of the mass model of Spanier and Johansson[59] is listed as 12. However, in the article[59] by Spanier and Johansson the authors themselves list in their Table A 30 parameters plus five

magic numbers that are not calculated within the mass model and must therefore be considered parameters, for a total of at least 35 parameters.

We specify here *all* the constants that enter our model, rather than just those that in the final step are adjusted to experimental data by a least-squares procedure. We also include such constants as the number of basis functions used and fundamental constants like the electronic charge and Planck's constant.

3.1. Constants in the FRDM

The discussion in the previous section allows us to enumerate the constants in the FRDM model in Table A. From this list we see that the macroscopic–microscopic method requires relatively few constants. One feature of the model gives rise to a small complication when counting the number of constants. Droplet-model constants occur also in the determination of the single-particle potential. However, a different set of constants is used here because, as discussed above, one does not know what the optimum values are until the calculation has been completed. In principle, the calculation should be repeated with the new droplet-model constants defining the single-particle potential until convergence is obtained. In Table A we have counted the number of constants as if this procedure had been carried out.

However, since the droplet-model constants used in the present calculations are different in the microscopic part and in the macroscopic part, different counting schemes could also be employed. Since the droplet-model constants used in the microscopic expressions are obtained from four primary constants[50] and nuclear masses were used only to give rough estimates of these constants, one may not wish to regard them as determined from mass-like quantities. One of the four primary constants is the nuclear-radius constant r_0, which has the same value we use in our macroscopic model. Therefore, only three remain that could be considered as additional FRDM constants. With this classification scheme the number of constants adjusted to mass-like quantities remains 16 and the

TABLE A

Constants in the FRDM

Constants	Comment	Mass-like	Other
M_H, M_n, e^2	Macroscopic fundamental constants	0	3
a_{el}, r_0, r_p, a, a_{den}, K	Macroscopic constants from considerations other than mass-like data	0	6
L, a_3, W, h	Macroscopic constants obtained in prior adjustments to mass-like data	4	0
a_1, a_2, J, Q, a_0, C, γ, c_a	Macroscopic constants determined by current least-squares adjustments	8	0
hc, m_{nuc}	Microscopic fundamental constants	0	2
V_s, V_a, A_{den}, B_{den}, C_{cur}, k_p, l_p, k_n, l_n, a_{pot}, $\mathcal{H}$	Microscopic constants	0	11
N_{bas}, p, C_S	Microscopic constants determined from considerations of mass-like quantities	3	0
r_{mic}	Microscopic constant determined by current least-squares adjustments	1	0
a_1, a_2, J, K, L, Q	Droplet-model constants that enter the single-particle potential (see discussion in text)	0	0
Subtotals		16	22
Total			38

Note. The third column gives the number of constants adjusted to nuclear masses or mass-like quantities such as odd–even mass differences or fission-barrier heights. The fourth column gives the number of constants determined from other considerations.

TABLE B

Constants in the FRLDM

Constants	Comment	Mass-like	Other
M_H, M_n, e^2	Macroscopic fundamental constants	0	3
a_{el}, r_0, r_p, a, a_{den}	Macroscopic constants from considerations other than mass-like data	0	5
W, h	Macroscopic constants obtained in prior adjustments to mass-like data	2	0
a_v, κ_v, a_s, κ_s, a_0, c_a	Macroscopic constants determined by current least-squares adjustments	6	0
$\hbar c$, m_{nuc}	Microscopic fundamental constants	0	2
V_s, V_a, A_{den}, B_{den}, C_{cur}, k_p, l_p, k_n, l_n, a_{pot}, $\mathcal{H}$	Microscopic constants	0	11
N_{bas}, p, C_s, r_{mic}	Microscopic constants determined from considerations of mass-like quantities	4	0
a_1, a_2, J, K, L, Q	Droplet-model constants that enter the single-particle potential (see discussion in text)	3	0
Subtotals		15	21
Total			36

Note. The third column gives the number of constants adjusted to nuclear masses or mass-like quantities such as odd–even mass differences or fission-barrier heights. The fourth column gives the number of constants determined from other considerations.

total number of constants in the model increases from 38 to 41. Alternatively, if we do count the three primary constants as adjusted to nuclear masses, the total number of FRDM constants is 41, while the number adjusted to mass-like quantities increases from 16 to 19.

3.2. Constants in the FRLDM

The constants in the FRLDM, which are either identical to or similar to the constants in the FRDM, are enumerated in Table B. We mentioned in the discussion of the FRDM constants that the six constants in the last line of Table A would converge to the values of the same constants listed earlier in the table after a sufficient number of iterations. In the FRDM these constants therefore need not be regarded as additional constants. In contrast, in the FRLDM they must be regarded as constants obtained from adjustments to mass-like quantities. However, as mentioned in the discussion of the FRDM constants, these constants are all obtained from three primary constants, so we only include three in this category.

4. RESULTS

4.1. Determination of Ground-State Shapes and Masses

The adjustment of constants in the macroscopic model is simplified enormously because the ground-state shape and fission saddle-point shape are approximately independent of the precise values of these constants when they are varied within a reasonable range.[60] We therefore calculate the ground-state deformation with one set of constants and subsequently determine the various terms

in the mass expression at this deformation. The constants of the macroscopic model can then be adjusted, with the nuclear shapes remaining fixed.

A significant advantage of this approach is that the effect of new features can often be investigated without repeating the entire calculation from the beginning, which would take about 100 h of CRAY-1 CPU time. For example, when we investigated different pairing models and determined the optimum value of the pairing constant, we needed to recalculate only the pairing-energy term for each of the 8979 nuclei in our study. Since we have in the initial part of the calculation determined ground-state shapes and stored the corresponding ground-state single-particle levels for all nuclei on disk, we need only read in the single-particle levels, do the pairing calculation, and readjust the model constants to obtain the effect of a new pairing model or new pairing-model constant. Such a study takes only about 20 min of CRAY-1 CPU time.

Our determination of mass-model constants and ground-state nuclear masses involves several steps. We first briefly list these steps and then continue with a more extensive discussion.

1. Potential-energy surfaces are calculated versus ϵ_2 and ϵ_4. In this calculation, which was actually performed already in 1987, the FRLDM as defined in Ref. 3 is used, except that for the pairing calculations the BCS approximation is used instead of the LN approximation. From these potential-energy surfaces the ground-state ϵ_2 and ϵ_4 deformations are determined.

2. The ground-state energy is minimized with respect to ϵ_3 and also with respect to ϵ_6 for fixed values of ϵ_2 and ϵ_4.

3. When the resulting ground-state shapes have been determined, single-particle levels are calculated for each nucleus at the appropriate deformation and stored on disk. The shell-plus-pairing correction is also calculated and stored on disk at this time. The shell-plus-pairing correction is then available for use in the calculation of ground-state masses and in the determination of macroscopic-model constants. It is the only microscopic quantity required for the mass adjustment.

4. Now that the ground-state shapes have been determined, the various shape-dependent functions that occur in the macroscopic energy are evaluated at each appropriate ground-state shape and stored on disk.

5. Analogous steps to those above for masses are carried out also for 28 fission-barrier heights.

6. Least-squares adjustments are now performed, with the nuclear masses weighted 80% and the fission-barrier heights weighted 20%. The macroscopic-model constants are determined and the ground-state masses and the fission barriers are calculated.

7. Finally, when the ground-state shapes and masses and fission-barrier heights are known, other properties such as β-decay half-lives, β-delayed neutron-emission and fission probabilities, and Q values for α decay are calculated.

For the major portion of the potential-energy-surface calculation we have chosen the grid

$$\epsilon_2 = -0.50(0.05)0.50, \quad \epsilon_4 = -0.16(0.04)0.16. \quad (121)$$

When the ground-state minimum is outside this grid we have used instead the expanded, but less-dense grid

$$\epsilon_2 = -1.0(0.1)1.0, \quad \epsilon_4 = -0.28(0.07)0.28. \quad (122)$$

For large values of ϵ_4 the nuclear shapes develop somewhat unnatural wiggles. These wiggles can be removed and the energy lowered by use of higher multipoles in the specification of the nuclear shape.[30,61] We include in the first step of our calculations one higher multipole, namely ϵ_6. However, since in this step we want to consider only two independent shape coordinates, we determine ϵ_6 at each value of ϵ_2 and ϵ_4 by minimizing the macroscopic potential energy for ^{240}Pu. For heavy nuclei the value of ϵ_6 obtained in such a minimization is approximately independent of the nucleus considered. On the other hand, for very light nuclei minimization with respect to ϵ_6 (and in some cases with respect to ϵ_4) leads to values corresponding to unphysical shapes. These arise because if the distance across a wiggle on the nuclear surface is on the order of the range of the Yukawa-plus-exponential folding function, the nuclear energy increases very little but the Coulomb energy decreases strongly with increasing deformation. For ϵ_6 we avoid this difficulty by minimizing the energy for ^{240}Pu, which is sufficiently large that also with ϵ_6 distortions included the wiggles on the surface are larger than the range of the Yukawa-plus-exponential function. In the light region we avoid unphysical values of ϵ_4 by including only a physical range of values in our grid.

We use the single-particle states of the folded-Yukawa single-particle potential to calculate the shell-plus-pairing corrections at each grid point. Although the constants of the single-particle potential depend on Z and N, for the determination of the ground-state values of ϵ_2 and ϵ_4 we use the same set of calculated levels for a region of neighboring nuclei, since it is too time-consuming to repeat the diagonalization for each value of Z and N. However, when the same levels are used for a moderately large region of nuclei, the shell correction for a magic nucleus calculated in this way may differ by 1 MeV or more from the shell correction calculated with the single-particle potential appropriate to that particular nucleus.

To overcome this difficulty we proceed by first noting that most constants of the single-particle potential have been determined for nuclei close to the line of β stability.

Because of this and because the radius of the single-particle potential is one of its most important constants, we reduce the Z and N dependence of the constants of the microscopic model to an A dependence only. We next divide the nuclear chart into regions of suitable size, choosing for each region one set of single-particle constants. The regions are centered about the mass numbers A = 16, 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300, 320, and 340. The individual values of Z and N for each region are taken to be the closest integers corresponding to Green's approximation[62] to the line of β stability, namely

$$N - Z = \frac{0.4A^2}{A + 200}. \qquad (123)$$

For each nucleus with a mass number different from one of these central mass numbers we calculate the microscopic corrections for *two* sets of constants. For example, nuclei with $201 \leqslant A \leqslant 239$ are included in the A = 220 calculation and nuclei with $221 \leqslant A \leqslant 259$ are included in the A = 240 calculation. To determine E_{s+p} for, say, a nucleus with A = 225, we linearly interpolate on the ϵ_2–ϵ_4 grid in terms of A between the result for A = 220 and the result for A = 240. We find that such an interpolation gives results that agree to within a few hundred keV with those obtained with a single-particle potential appropriate to the specific nuclei concerned.

Once the ground-state values of ϵ_2 and ϵ_4 are determined from the minimum of E_{s+p} in this way, the shell-plus-pairing corrections are recalculated at these ground-state shapes with the exact single-particle potential appropriate to each of the 8979 nuclei. The slight approximation made in calculating the potential-energy surfaces affects only the calculation of the *shape* and has a negligible effect on the final energy.

After the ground-state ϵ_2 and ϵ_4 deformations are determined, we investigate the stability of the ground state with respect to ϵ_3 and ϵ_6 shape degrees of freedom. Rather than simultaneously varying all shape degrees of freedom, we instead vary ϵ_3 and ϵ_6 separately, with ϵ_2 and ϵ_4 held fixed at the values previously determined. When ϵ_3 is varied ϵ_6 is set equal to the value used in the original minimization with respect to ϵ_2 and ϵ_4, and when ϵ_6 is varied ϵ_3 is set equal to zero. The deeper of the two minima obtained in these two minimizations is selected as the ground state. The importance of the ϵ_3 and ϵ_6 shape degrees of freedom is discussed further in Ref. 10. Because surface wiggles should not become too small relative to the range in the Yukawa-plus-exponential function, the ϵ_6 minimization is carried out only for nuclei with $A > 60$.

After the ground-state shapes are determined, the shell-plus-pairing corrections and shape-dependent macroscopic functions are calculated and stored on disk. The programs that use this information to determine the macroscopic-model constants and calculate ground-state masses are then run. Although the least-squares adjustment is a nonlinear one, it takes only a few minutes to find the optimum constant set in an eight-constant variation and to calculate the final mass table. At this point it is relatively simple to investigate alternative model assumptions. As an example, we discuss the results of one such investigation concerning the effect of varying the microscopic pairing constant r_{mic}.

In our earlier pairing-model studies[9] we determined r_{mic} in Eqs. (104) and (105) by minimizing the rms deviation between pairing gaps calculated in the LN model and experimental pairing gaps. An alternative possibility is to find r_{mic} by minimizing the error in the *mass model*. Because our change in the order of the Strutinsky shell correction does influence slightly the pairing calculations through the determination of G from the effective-interaction pairing gap Δ_G, a small change in r_{mic} could in principle be required to obtain an optimum pairing calculation. In a study of how the model error σ_{th} and the rms errors of the Lipkin–Nogami pairing gap Δ_{LN}, the theoretical-mass pairing gap $\Delta_{th,mass}$, and the neutron separation energy S_n depend on r_{mic}, we first calculate the ground-state shell-plus-pairing corrections for several values of r_{mic}. For each of these values we then determine a set of macroscopic-model constants and generate a full-fledged mass table. In this process we also obtain microscopic pairing quantities and neutron separation energies and compare them with experimental values. Recall that Δ_{LN} is the sum of the pairing gap Δ and the number-fluctuation constant λ_2 that occur in the Lipkin–Nogami equations. The pairing gap $\Delta_{th,mass}$ is determined from odd–even *theoretical*-mass differences. The results are summarized in Table C.

Ideally, the minimum deviation should occur for all quantities at the same value of r_{mic}, which is almost but not quite the case. As seen in Table C, all minima are close to the mass-model minimum at r_{mic} = 3.2 MeV. We therefore choose this value of r_{mic} for our microscopic pairing calculations. Experimental pairing gaps determined from odd–even mass differences contain large errors arising from nonsmooth contributions to the mass surface other than pairing effects, for example, from shape transitions and gaps in the deformed single-particle level spectra. Since such contributions are equally present in Δ_{exp} and $\Delta_{th,mass}$, they should cancel out approximately in the difference between these two quantities, if the mass model errors were sufficiently small. Consequently, the other nonsmooth contributions to the mass surface are not expected to affect an rms minimization of $\Delta_{th,mass}$. It is therefore of interest to note that our chosen value of r_{mic} is intermediate between what would have been obtained from considering $\Delta_{th,mass}$ and Δ_{LN} deviations.

TABLE C

Determination of the Pairing Constant r_{mic}

r_{mic} (MeV)	σ_{th} Mass model (MeV)	rms Δ_{LN} (MeV)	rms $\Delta_{th.mass}$ (MeV)	rms S_n (MeV)
3.1	0.6746	0.1740	0.2035	0.409
3.2	0.6694	0.1691	0.2044	0.411
3.3	0.6695	0.1675	0.2091	0.416
3.5	0.6733	0.1745	0.2287	0.432

Note. See text for explanation of the listed quantities.

The FRDM, which includes Coulomb-redistribution effects, is now our preferred nuclear mass model. Relative to the work described in Ref. 10, the following further improvements have been incorporated into the model. First, it was found that the γ zero-point energy could not be calculated with sufficient accuracy in our current model. It is therefore no longer included, whereas the ϵ_2 zero-point energy is still retained. Second, we have also returned to our original choice of basis functions corresponding to 12 oscillator shells for all A values, instead of using somewhat fewer basis functions for lighter nuclei.[10] Third, we now use an eighth-order Strutinsky shell correction with range $\gamma_S = 1.0\hbar\omega_0 B_s$ instead of our earlier choice of a sixth-order Strutinsky shell correction with the same range coefficient but no dependence on surface area. The change in zero-point energy reduced the error in the calculated neutron separation energies from 0.551 to 0.444 MeV and the error in the calculated masses from 0.778 (Ref. 10) to 0.773 MeV. The second and third improvements further reduced the separation-energy error to 0.411 MeV and the mass-model error to 0.669 MeV. The rms error for $\Delta_{th.mass}$ has decreased in a similar manner as the error in S_n. Although the effect of the mass-model improvements on Δ_{LN} is small, the effect on $\Delta_{th.mass}$ is dramatic. Relative to our earlier pairing calculation,[9] the improvement is more than 20%. It is no accident that both S_n and $\Delta_{th.mass}$ showed similar improvements. Both are determined from mass differences between nearby masses, and such differences dramatically improved when the inaccurate γ zero-point energies were excluded from the calculations. The constants of the final model were presented in an earlier section.

As seen in Table C, the error in our mass model is now 0.669 MeV. We have also performed a mass calculation with the FRLDM as the macroscopic model and identical shell-plus-pairing corrections as in the FRDM calculation. For the FRLDM the corresponding error is 0.779 MeV, which is 16% higher.

Figure 1 shows the results of the FRDM calculation. As usual, the top part shows the differences between measured masses and the spherical macroscopic FRDM contributions plotted against the neutron number N, with isotopes of a particular element connected by a line. These experimental microscopic corrections are to be compared with the calculated microscopic corrections plotted in the middle part of the figure. When the macroscopic and microscopic parts of the mass calculation are combined and subtracted from the measured masses, the deviations in

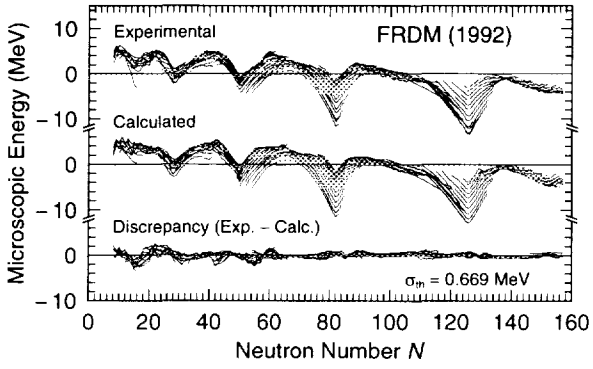


Figure 1. Comparison of experimental and calculated microscopic energies E_{mic} for 1654 nuclei, for a macroscopic model corresponding to the FRDM. The bottom part showing the difference between these two quantities is equivalent to the difference between measured and calculated ground-state masses. There are almost no systematic errors remaining for nuclei with $N \geq 65$, for which region the error is only 0.448 MeV. The results shown in this figure represent our new mass model. The lines are drawn through isotope chains.

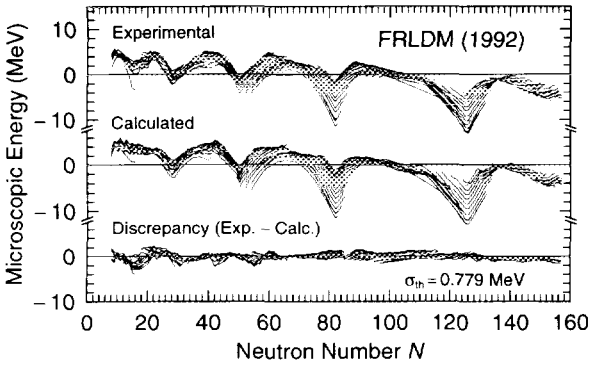


Figure 2. Analogous to Fig. 1, but for the FRLDM, which contains no Coulomb-redistribution terms. This leads to the systematic negative errors in the heavy region, which indicate that the calculated masses are systematically too high.

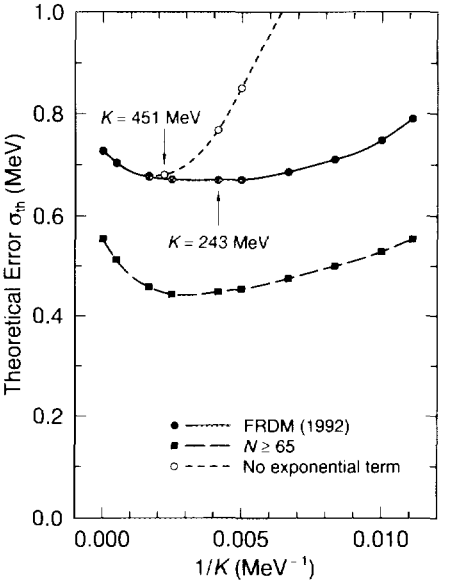


Figure 3. Relation between the compressibility coefficient K and the mass-model error. Calculated values are indicated by symbols, which are connected by curves to guide the eye. In our standard FRDM, which is our preferred model, the error depends only relatively weakly on the compressibility coefficient in the range 200 MeV $\leqslant K \leqslant$ 500 MeV, as is shown by the solid circles. Without the exponential term a relatively high compressibility coefficient would be required. The error in the heavy region, shown by the solid squares, indicates that heavy nuclei, in particular, do not favor very large values of K. For heavy nuclei with $N \geqslant 65$ the model error increases by 25% from its minimum value as K approaches $+\infty$, whereas the increase is only 8% when all nuclei are considered.

the bottom part of the figure remain. The trends of the error in the heavy region suggest that this mass model should be quite reliable for nuclei beyond the current end of the periodic system. This has been made all the more plausible by simulations discussed in Section 4.3 on extrapolatability. When ϵ_3 and ϵ_6 shape degrees of freedom are included in the mass calculations, it becomes clear that the FRLDM, which does not treat Coulomb-redistribution effects, is deficient in the heavy-element region, as is seen in Fig. 2. Thus, our preferred mass model is now the FRDM, which includes compressibility effects and the associated Coulomb redistribution.

4.2. Compressibility

We have earlier[4] studied how the discrepancy between measured masses and calculated masses depends on the compressibility constant K and on the new exponential term. In this earlier investigation we used the 1984 version of the FRDM.[5] We found that the minimum error occurred for K = 324 MeV. For this value the rms deviation between calculated and experimental masses was 0.666 MeV. For the conventional value K = 240 MeV the rms error was only marginally higher, namely 0.676 MeV. Because of the relative insensitivity of the rms error to the value of the compressibility constant K we retained[4] the historical value K = 240 MeV, as we also do here.

It is of interest to investigate the sensitivity of the model error to K also in the current version of the model. In Fig. 3 the solid circles connected by a solid line show the theoretical error in the mass model as a function of $1/K$. For each value of K the constants in the model are determined by minimizing the same weighted sum of barrier and mass errors that is referred to under point 6 in Section 4.1. However, only the theoretical error in the mass model itself is plotted. The arrow at K = 243 MeV indicates the optimum value of K obtained when the compressibility coefficient is varied along with the other constants. Thus, in our current model we obtain in a least-squares minimization a compressibility coefficient that is close to the value K = 240 MeV that was adopted from other considerations, but the determination is clearly subject to a large uncertainty.

We also investigate how the error for nuclei with $N \geqslant 65$ depends on K. This dependence is shown as solid squares connected by a long-dashed line. The model constants have the same values as those obtained from the adjustments corresponding to the solid circles. Thus, *no new adjustment* is performed to this limited region of nuclei; we investigate only the behavior of the error associated with this region.

Finally, we show as open circles connected by a short-dashed line the result obtained in an adjustment without the exponential term [Eq. (39)]. Here the minimum of the weighted sum of mass and barrier errors occurs at K = 451 MeV. The minimum of the function actually plotted, which is the mass error only, occurs at a slightly higher value of K.

The relatively low curvature of the solid curve shows that K cannot be reliably determined from an adjustment to nuclear masses. The conventional droplet-model value K = 240 MeV is consistent with the result we obtain in a least-squares adjustment to masses and fission-barrier heights, but from the adjustment alone one would not be able to rule out that K has some other value in the range from somewhat below 200 MeV to about 500 MeV.

The long-dashed curve shows that heavy nuclei in particular disfavor values of K close to infinity. For heavy nuclei with $N \geq 65$ the error in the FRDM increases by 25% from its minimum value as K approaches $+\infty$, whereas the increase is only 8% when all nuclei are considered. This observation has been made earlier and was taken as evidence for a Coulomb-redistribution effect.[10]

The short-dashed curve giving the results without an exponential term in the mass model is moderately incompatible with a compressibility coefficient close to 240 MeV and completely rules out a significantly lower value. However, our preferred treatment of the compressibility is the formulation that includes the exponential term, in which treatment the restrictions on K are the much less severe ones given above.

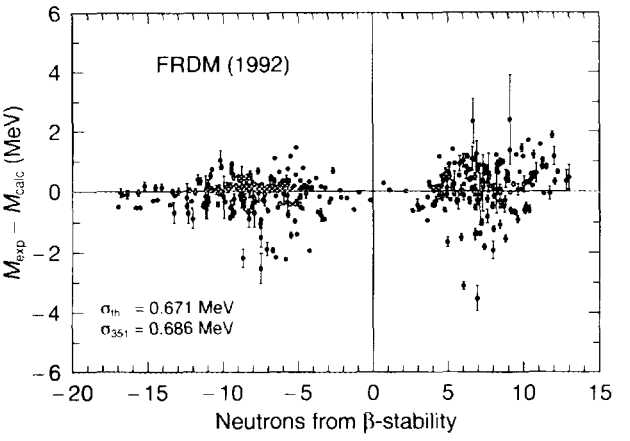


Figure 4. Calculation showing the reliability of the FRDM in new regions of nuclei. Here we use a smaller set of measured masses to determine the constants of the model than in the full calculation shown in Fig. 1. The errors for nuclei not included in the adjustment are displayed in this figure. The error is only 2% larger in the new region compared to that in the region where the constants were determined. The two largest deviations occur for ^{23}O and ^{24}O, which probably indicates that this region of light very neutron-rich nuclei is outside the range of model applicability. Proton number 8 is the lowest value of Z that we consider in this model. For the position of the line of β stability we use Green's approximation given by Eq. (123). This equation is solved for each proton number Z assuming A and N are floating-point numbers. Thus, the points in this figure are located at nonintegral values of N.

4.3. Extrapolatability

One test of the reliability of a nuclear mass model is to compare deviations between measured and calculated masses in new regions of nuclei that were not considered when the constants of the model were determined to deviations in the original region. This type of analysis was used earlier by Haustein.[63] However, we here considerably modify his approach. In addition to examining the raw differences between measured and calculated masses, we use these differences to determine the *model* mean discrepancy μ_{th} from the true masses and the *model* standard deviation σ_{th} around this mean, for new regions of nuclei. Whereas the raw differences do not show the true behavior of the theoretical error because errors in the measurements contribute to these differences, by use of the ideas developed in Section 2.1 we are able to estimate the *true* mean μ_{th} and standard deviation σ_{th} of the theoretical error term e_{th}.

Since our new mass model was developed only recently, we cannot test its reliability in new regions of nuclei because a sufficient number of new data points is not available. Therefore, we have resorted to a simple simulation, in which we adjusted the constants in the model to the same experimental data set that was used in our 1981 mass calculation.[1,2] Consequently, this calculation is not completely identical to the one on which Fig. 1 is based. The differences between the 351 new masses that are now measured[45] and the calculated masses are plotted *versus* the number of neutrons from β stability in Fig. 4. We observe no systematic increase in the error with increasing number of neutrons from β stability. For the new region of nuclei the square root of the second central moment is 0.686 MeV, compared to 0.671 MeV in the region where the parameters were adjusted, representing an increase of only 2%. In contrast, mass models based on postulated shell-correction terms and on a correspondingly larger number of constants normally diverge outside the region where the constants were determined.[11,12]

To study more quantitatively how the error depends upon the distance from β stability, we introduce bins in the error plot sufficiently wide to contain about 10–20 points and calculate the mean error and standard deviation about the mean for each of these bins by use of the methods described in Section 2.1. The results for our 1981

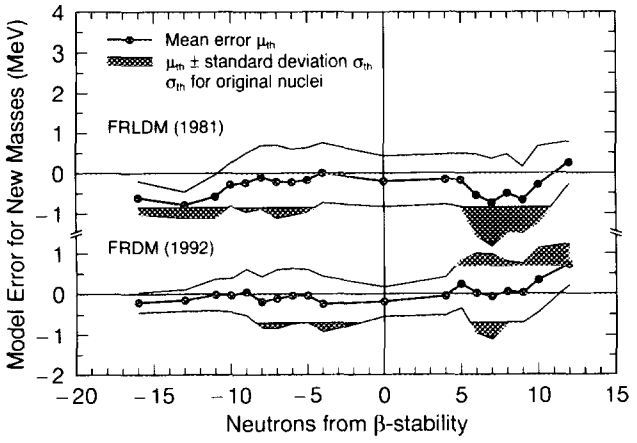


Figure 5. Comparison of the error behavior for two models applied to new nuclei *versus* the number of neutrons from β stability. See text for details.

FRLDM and for our 1992 FRDM, but adjusted only to the same data set as was used in our 1981 calculation, are shown in Fig. 5. For each model the central, light-gray band representing the original error region extends one (global) standard deviation σ_{th} on each side of zero. The solid dots connected by a thick black line represent the mean of the error μ_{th} for nuclei that were not considered when the constants in the model were determined. The thin black lines represent the standard deviation for each bin. The dark-gray areas indicate regions for which the individual bin deviations are not contained within the original global error. The properties of the two models displayed in Fig. 5 are summarized in Table D.

To test the reliability of the FRDM for extrapolation beyond the heaviest known elements we have performed a rather severe test in which we adjust the constants in the model only to data in the region $Z, N \geq 28$ and $A \leq 208$. There are 1110 known masses in this region compared to 1654 in the region $Z, N \geq 8$ used in our standard adjustment. Thus, about one-third of all known masses are excluded, with nuclei removed from both ends of the region of adjustment. We then apply the model with these constants to the calculation of all known masses in our standard region and compare the results to our standard model in Fig. 6. The error for the known nuclei is now 0.745 MeV, compared to 0.669 MeV with our standard model adjusted to all known nuclei. Although there is a noticeable increase of the error in the regions that were not included in the adjustment, an inspection of Fig. 6 indicates that the increased error in the heavy region is not due to a systematic divergence of the mean error, but rather to a somewhat larger scatter in the error.

In our standard model the mass excesses of $^{272}110$ and $^{288}110$ are 133.82 and 165.68 MeV, respectively. In our restricted adjustment we obtain 133.65 and 166.79 MeV, respectively. Thus, although $^{288}110$ is 80 units in A away from the last nucleus included in the restricted adjustment, the mass obtained in this numerical experiment is only about 1 MeV different from that obtained in the calculation whose constants were adjusted to nuclei up to 50 units in A closer to the superheavy region. Since our standard calculation is adjusted so much closer to the superheavy region than is the numerical experiment, we feel that it should be accurate to about 1 MeV in the superheavy region. Since models with and without Coulomb-redistribution energies often differ by considerably more, the masses of superheavy elements could provide very strong further confirmation of the existence of Coulomb-redistribution effects. A suitable nucleus for such a

TABLE D

Comparison of Errors of Two Different Mass Calculations

	Original nuclei		New nuclei					
Model	rms (MeV)	σ_{th} (MeV)	N_{nuc}	rms (MeV)	μ_{th} (MeV)	σ_{th} (MeV)	$\sigma_{th;\mu=0}$ (MeV)	Error ratio
FRLDM (1981)	0.835	0.831	351	0.911	−0.321	0.826	0.884	1.06
FRDM (1992)	0.673	0.671	351	0.735	−0.004	0.686	0.686	1.02

Note. The errors are tabulated both for the region in which the constants were originally adjusted and for a set of new nuclei that were not taken into account in the determination of the constants of the mass models. The error ratio is the ratio between the numbers in columns 8 and 3.

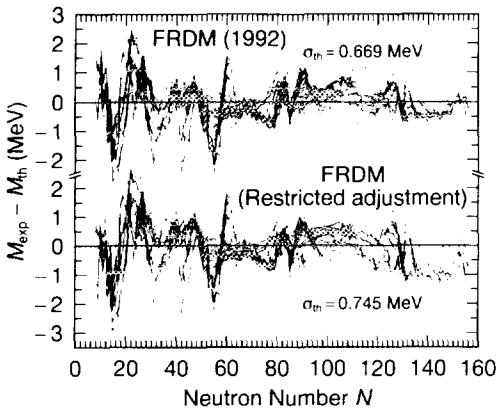


Figure 6. Test of extrapolatability of the FRDM toward the superheavy region. The top part of the figure shows the error of the standard FRDM. In the lower part the error was obtained from a mass model whose constants were determined from adjustments to the restricted set of nuclei with $Z, N \geq 28$ and $A \leq 208$. In the light region of nuclei there is no noticeable divergence of the results obtained in the restricted adjustment. In the heavy region there is some increase in the spread of the error, but no systematic divergence of the mean error. Based on the more detailed discussion in the text we deduce that our calculated masses for the superheavy elements are accurate to about 1 MeV.

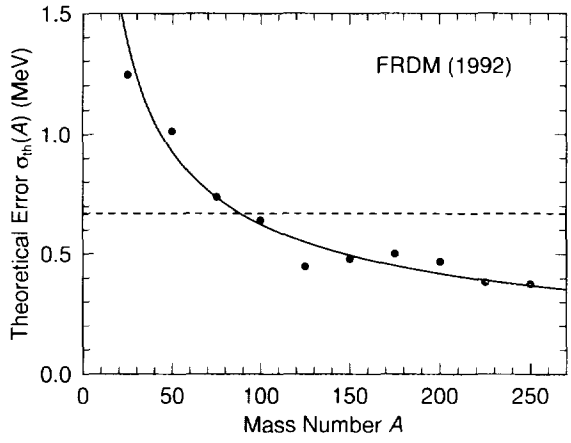


Figure 7. Error in the mass calculation as a function of mass number A. The theoretical error has been determined for limited regions throughout the periodic system. The error represented by each solid circle is based on nuclei in a region that extends 24 mass units below the circle and 25 mass units above the circle. The points are well approximated by the function 8.62 MeV/$A^{0.57}$.

test is ^{272}110. The FRDM, which includes Coulomb-redistribution effects, predicts a mass excess of 133.82 MeV for this nucleus, whereas the FRLDM, which does not include Coulomb-redistribution effects, predicts 136.61 MeV.

Figure 1 shows that as the lighter region is approached the error gradually increases in a systematic way. We have explored this possibility by first determining the model error for limited regions of nuclei by use of Eq. (9). We select $A = 25(25)250$ as centerpoints of the regions and define each region to extend from $A_{center} - 24$ to $A_{center} + 25$. The errors in these restricted regions are shown as solid circles in Fig. 7. Since the trend of the error looks approximately like c/A^{α} we have determined the parameters of this assumed error function by use of the maximum-likelihood equations (15) and (16). We find $c = 8.62$ MeV and $\alpha = 0.57$. The error function corresponding to these parameters is plotted as a solid line.

4.4. Fission Barriers

Calculated heights of the outer peak in the fission barrier are compared to measured values in Table E. The results are also shown graphically in Fig. 8. Extensive fission studies based on earlier and current versions of the models discussed here are presented in Refs. 30, 31, 33, and 64–69.

4.5. Ground-State Masses and Deformations

In the Table we tabulate our calculated ground-state deformations in the ϵ parameterization, the corresponding coefficients β in a spherical-harmonics expansion, the atomic mass excesses and microscopic energies calculated in both the FRDM and the FRLDM, and experimental masses and associated errors that were used in the adjustment of model constants.

To give an overview, the tabulated FRDM quantities are plotted versus N and Z in the form of color contour diagrams. The calculated ground-state deformations ϵ_2, ϵ_3, ϵ_4, and ϵ_6 are shown in Figs. 9–12, and the corresponding coefficients β_2, $|\beta_3|$, β_4, and β_6 are shown in Figs. 13–16. We observe some features that are by now well-known. For example, the absolute value of the quadrupole deformation ϵ_2 increases by about 0.05 for each deformed region below the actinide region. Oblate deformations occur in transition regions on the heavy side of most deformed regions. The hexadecapole deformation ϵ_4 is large and negative in the beginning of deformed regions and large and positive in the end of deformed regions. The coefficients β_3, β_4, and β_6 have the opposite sign from the corresponding ϵ deformations, whereas β_2 has the same sign as ϵ_2 but is roughly 10% larger.

TABLE E

Comparison of Experimental and Calculated Fission-Barrier Heights for 28 Nuclei

Z	N	A	Experimental barrier (MeV)	Calculated barrier (MeV)	Discrepancy (MeV)
48	61	109	34.00	35.69	−1.69
66	94	160	27.40	27.88	−0.48
76	110	186	23.40	21.21	2.19
	112	188	24.20	21.07	3.13
80	118	198	20.40	19.16	1.24
84	126	210	20.95	21.81	−0.86
	128	212	19.50	19.69	−0.19
88	140	228	8.10	8.41	−0.31
90	138	228	6.50	7.43	−0.93
	140	230	7.00	7.57	−0.57
	142	232	6.30	7.63	−1.33
	144	234	6.65	7.44	−0.79
92	140	232	5.40	6.61	−1.21
	142	234	5.80	6.79	−0.99
	144	236	5.75	6.65	−0.90
	146	238	5.90	4.89	1.01
	148	240	5.80	5.59	0.21
94	144	238	5.30	4.85	0.45
	146	240	5.50	4.74	0.76
	148	242	5.50	5.25	0.25
	150	244	5.30	5.78	−0.48
	152	246	5.30	6.27	−0.97
96	146	242	5.00	4.24	0.76
	148	244	5.00	5.05	−0.05
	150	246	4.70	5.69	−0.99
	152	248	5.00	6.07	−1.07
	154	250	4.40	5.51	−1.11
98	154	252	4.80	5.31	−0.51

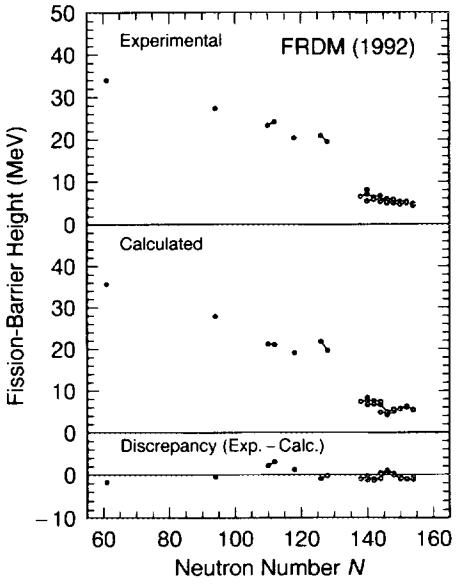


Figure 8. Comparison of experimental and calculated fission-barrier heights for 28 nuclei. Isotopes are connected by lines.

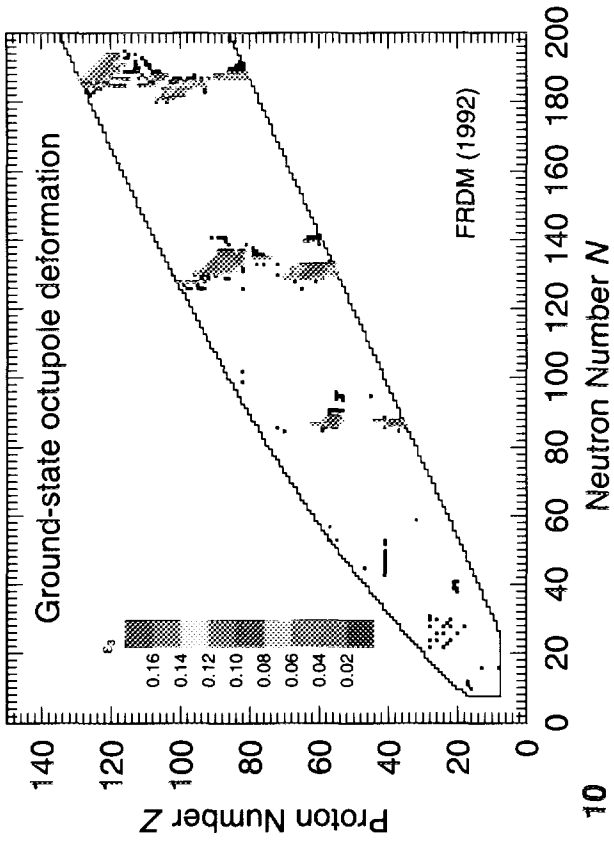
The microscopic energy E_{mic} is plotted in Fig. 17. The familiar doubly magic regions around $^{100}_{50}Sn_{50}$, $^{132}_{50}Sn_{82}$, and $^{208}_{82}Pb_{126}$ stand out clearly. The center of the superheavy region is located at $^{294}115_{179}$. The large neg-

Figure 9. Calculated ground-state values of $|\epsilon_2|$ for 7969 nuclei with $N < 200$. Oblate shapes are indicated with horizontal black lines. About 14 deformed regions stand out, bordered or partially bordered by blue lines corresponding to magic nucleon numbers. The magnitude of the deformation in the deformed regions increases by about 0.05 with successively lighter regions or as one goes from neutron-rich to proton-rich regions. Highly deformed superheavy nuclei with $N \geq 178$ usually have very low fission barriers and consequently should have spontaneous-fission half-lives that are too short to be detectable.

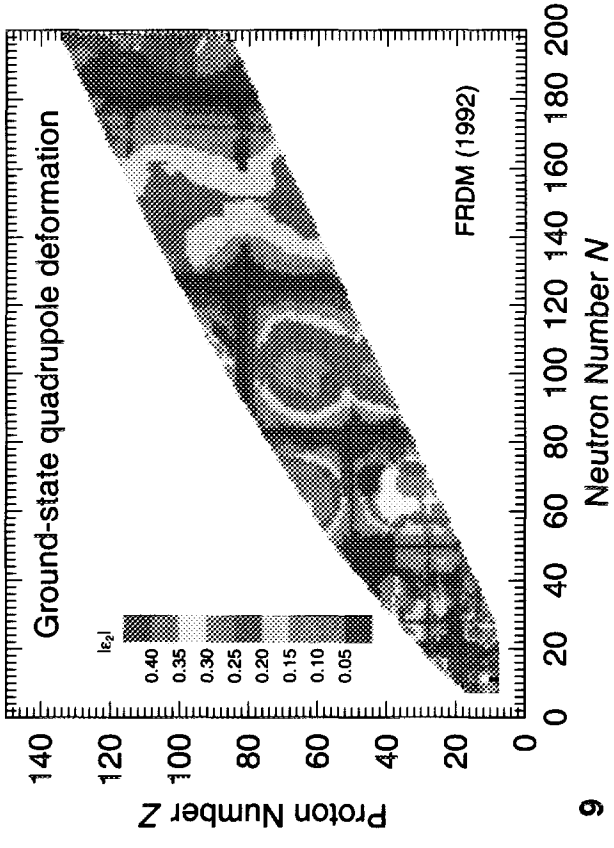
Figure 10. Calculated ground-state values of ϵ_3 for 7969 nuclei with $N < 200$. Most nuclei in the investigated region inside the black line are stable with respect to mass-asymmetric octupole deformations; only 640 nuclei are unstable with respect to these deformations. The largest effects of experimental significance are centered around $^{222}_{88}Ra_{134}$.

Figure 11. Calculated ground-state values of ϵ_4 for 7969 nuclei with $N < 200$. Characteristically, the values are large and negative in the beginning of major deformed regions and large and positive in the end of major deformed regions. In accordance with this general trend, ϵ_4 is large and positive near the rock of stability in the vicinity of $^{272}110$ near the end of the deformed "actinide" region.

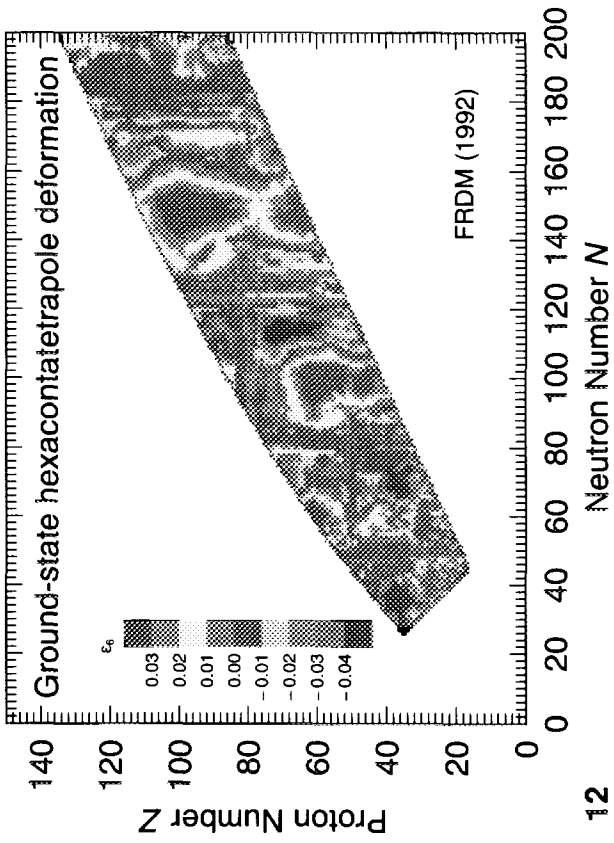
Figure 12. Calculated ground-state values of ϵ_6 for 7969 nuclei with $N < 200$. The behavior of ϵ_6 is less regular than that of the lower, even multipole distortions.


Ground-state octupole deformation
FRDM (1992)
Proton Number Z
Neutron Number N
0 20 40 60 80 100 120 140 160 180 200
20 40 60 80 100 120 140
0.16 0.14 0.12 0.10 0.08 0.06 0.04 0.02

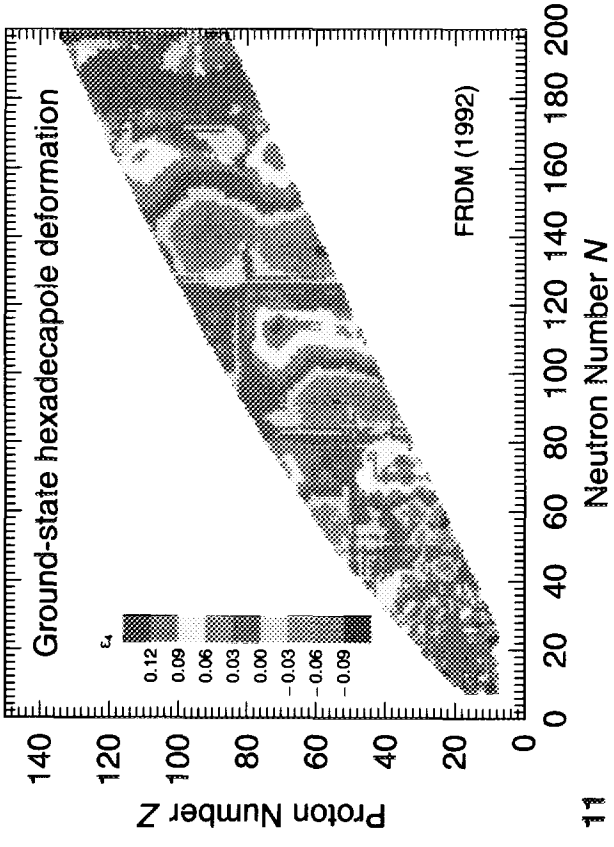
10


Ground-state quadrupole deformation
FRDM (1992)
Proton Number Z
Neutron Number N
0 20 40 60 80 100 120 140 160 180 200
20 40 60 80 100 120 140
0.40 0.35 0.30 0.25 0.20 0.15 0.10 0.05

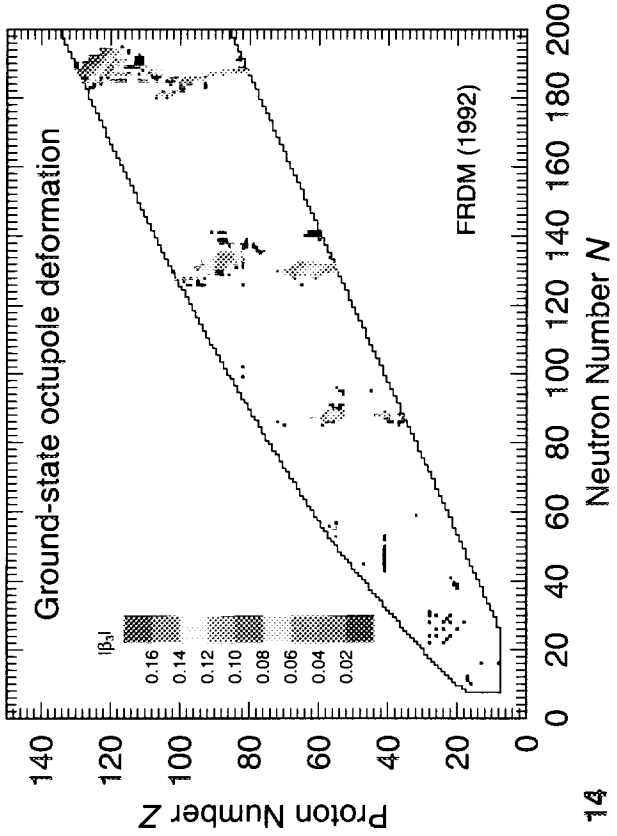
9


Ground-state hexacontatetrapole deformation
FRDM (1992)
Proton Number Z
Neutron Number N
0 20 40 60 80 100 120 140 160 180 200
20 40 60 80 100 120 140
0.03 0.02 0.01 0.00 −0.01 −0.02 −0.03 −0.04

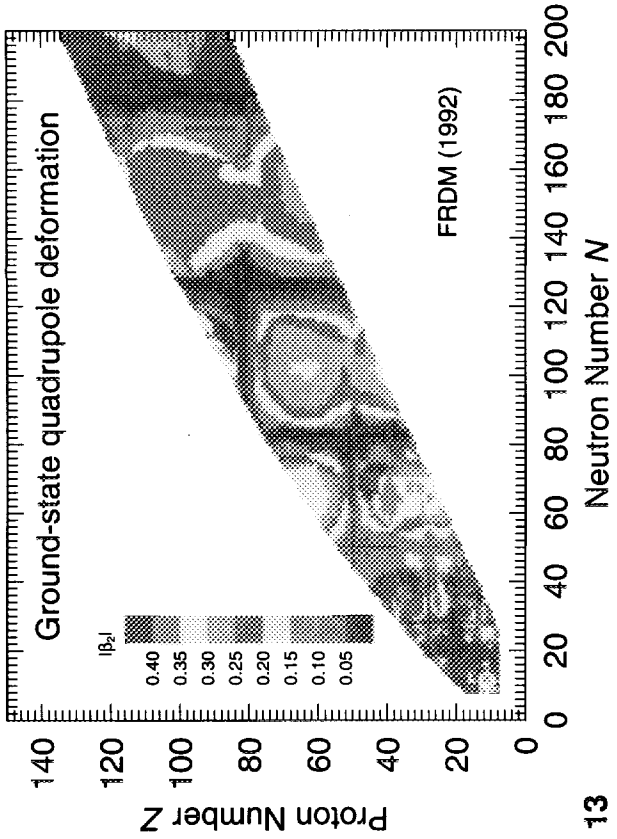
12


Ground-state hexadecapole deformation
FRDM (1992)
Proton Number Z
Neutron Number N
0 20 40 60 80 100 120 140 160 180 200
20 40 60 80 100 120 140
0.12 0.09 0.06 0.03 0.00 −0.03 −0.06 −0.09

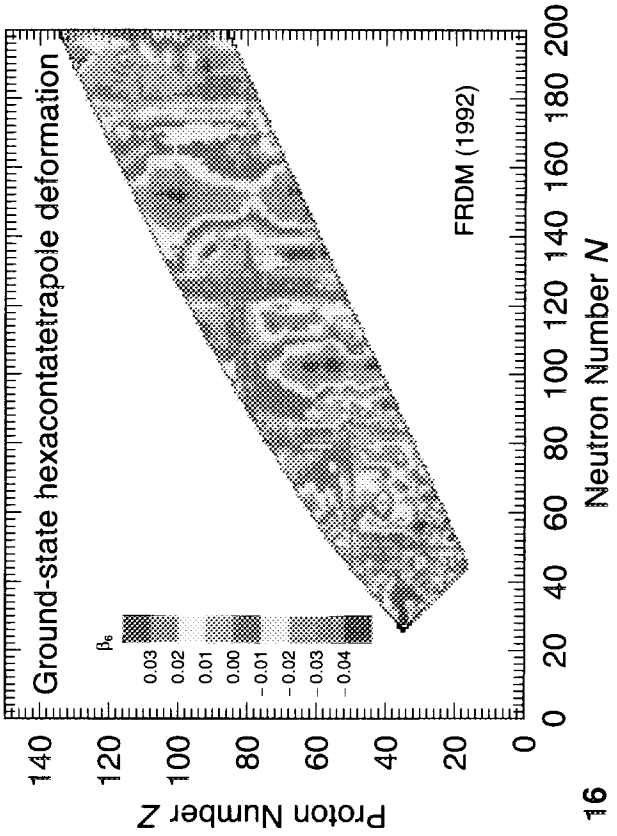
11


Ground-state octupole deformation
$|\beta_3|$
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
FRDM (1992)
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

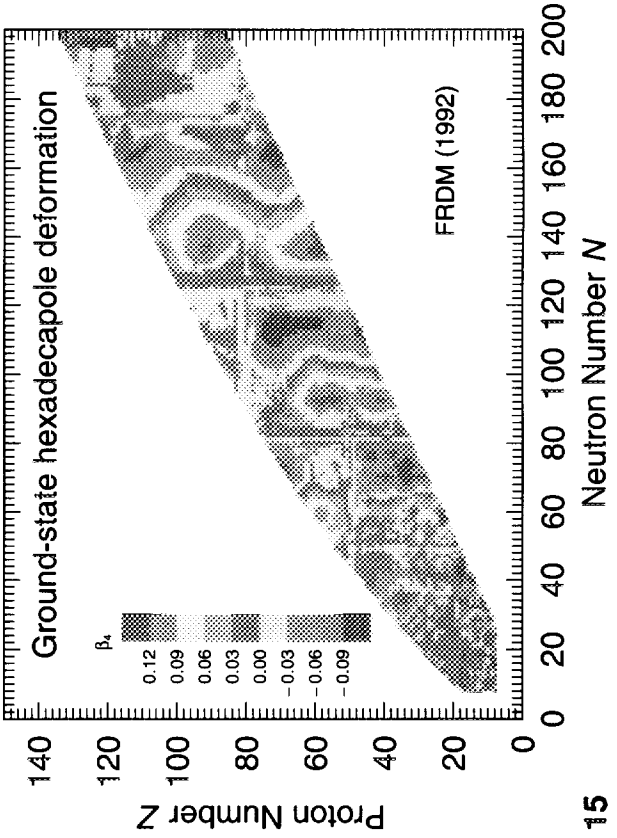
14


Ground-state quadrupole deformation
$|\beta_2|$
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
FRDM (1992)
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

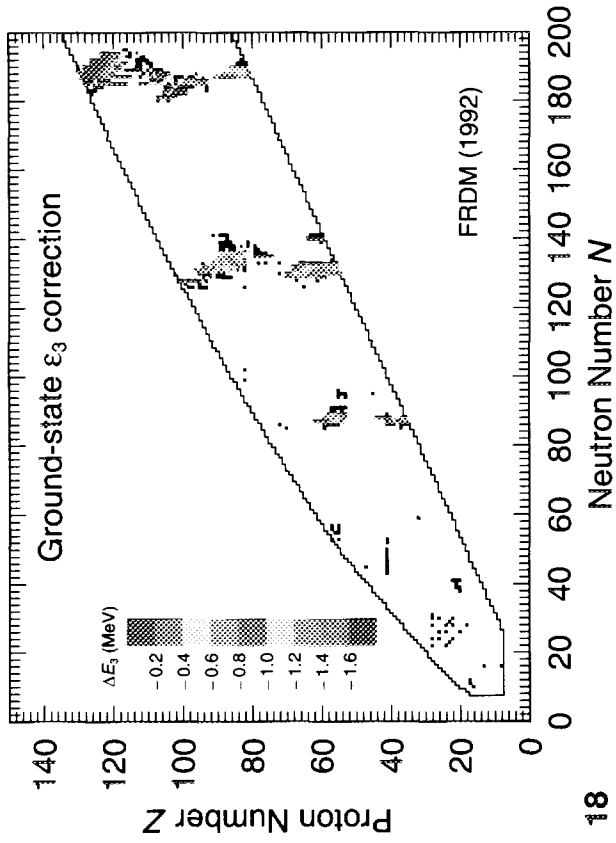
13


Ground-state hexacontatetrapole deformation
β_6
0.03
0.02
0.01
0.00
−0.01
−0.02
−0.03
−0.04
FRDM (1992)
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

16


Ground-state hexadecapole deformation
β_4
0.12
0.09
0.06
0.03
0.00
−0.03
−0.06
−0.09
FRDM (1992)
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

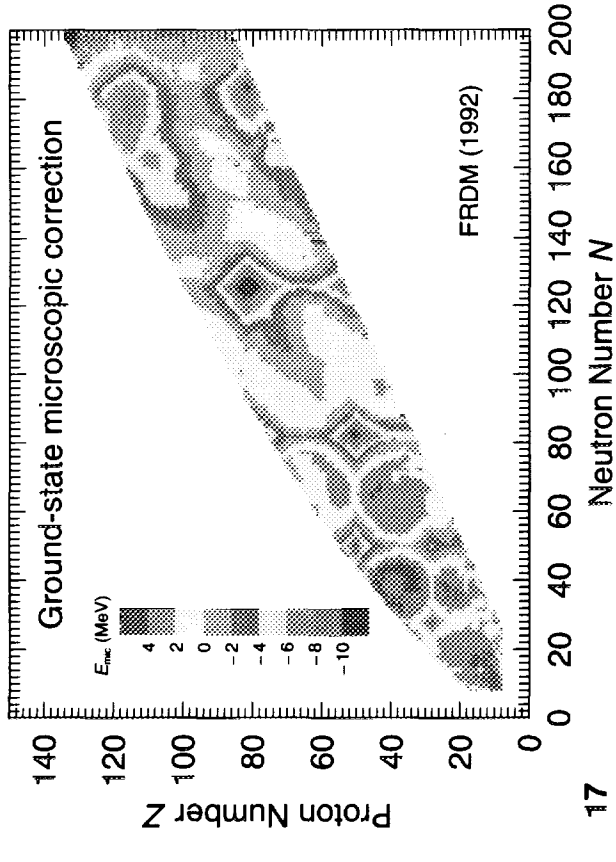
15


Ground-state microscopic correction
FRDM (1992)
E_{mic} (MeV)
4
2
0
−2
−4
−6
−8
−10
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

17

Ground-state ε_3 correction
FRDM (1992)
ΔE_3 (MeV)
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
−1.4
−1.6
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

18


Ground-state ε_6 correction
FRDM (1992)
ΔE_6 (MeV)
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
−1.4
−1.6
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160
180
200

19

Discrepancy (Exp. − Calc.)
FRDM (1992)
ΔE (MeV)
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
Proton Number Z
Neutron Number N
0
20
40
60
80
100
120
140
160

20

ative microscopic correction originating in the superheavy region extends a significant distance toward the southwest and reaches into the deformed actinide region. It is these large, negative microscopic corrections that have made possible the extension of the known elements as far as $^{266}_{109}Mt_{157}$. As is seen in Figs. 18 and 19, the largest effects of ϵ_3 and ϵ_6 in experimentally accessible regions occur around $^{222}_{88}Ra_{134}$ and $^{252}_{100}Fm_{152}$, respectively.

In Fig. 20 we show the discrepancy between experimental and calculated masses in the form of a contour diagram versus N and Z. Above $N \approx 65$ there are only a few nuclei with an error marginally larger than 1 MeV. The noticeable errors near $Z = 40$, $N = 56$ are probably related to the unique[14] shell structure in this region and the reinforcement of the $N = 56$ shell closure for proton number $Z = 40$ and proton numbers just below. Such proton–neutron interactions are not accurately described within any simple single-particle effective-interaction framework.

Acknowledgments

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Figure 13. Calculated ground-state values of $|\beta_2|$ for 7969 nuclei with $N < 200$, which have been obtained by use of transformation (38) from the ϵ deformations. Oblate shapes are indicated by horizontal black lines. Comments given in the legend to Fig. 9 also apply here.

Figure 14. Calculated ground-state values of $|\beta_3|$ for 7969 nuclei with $N < 200$, which have been obtained by use of transformation (38) from the ϵ deformations.

Figure 15. Calculated ground-state values of β_4 for 7969 nuclei with $N < 200$, which have been obtained by use of transformation (38) from the ϵ deformations. Comments given in the legend to Fig. 11 also apply here, but note that the sign of β_4 is opposite that of ϵ_4 when significant deformations develop.

Figure 16. Calculated ground-state values of β_6 for 7969 nuclei with $N < 200$, which have been obtained by use of transformation (38) from the ϵ deformations. Comments given in the legend to Fig. 12 also apply here, but note that the sign of β_6 is opposite that of ϵ_6 when significant deformations develop.

Figure 17. Calculated ground-state microscopic energies E_{mic} for 7969 nuclei with $N < 200$. Well-known doubly magic regions at $^{100}_{50}Sn_{50}$, $^{132}_{50}Sn_{82}$, and $^{208}_{82}Pb_{126}$ stand out clearly. The minimum in the superheavy region is offset somewhat from $^{298}114_{184}$ and is located instead at $^{294}115_{179}$. An interesting feature, also present in our first mass calculation,[2,14] is the rock of stability at $^{272}_{109}Mt_{163}$.

Figure 18. Calculated ground-state octupole instability for 7969 nuclei with $N < 200$. Only 640 nuclei exhibit any instability with respect to this shape degree of freedom. The largest effect in the experimentally accessible region is -1.41 MeV for $^{222}_{89}Ac_{133}$.

Figure 19. Calculated ground-state hexacontatetrapole instability for 7969 nuclei with $N < 200$. The instability is relative to the energy corresponding to the macroscopic equilibrium value of ϵ_6, with ϵ_3 set equal to zero. The largest effect is -1.29 MeV for $^{251}_{99}Es_{152}$.

Figure 20. Discrepancy between measured and calculated masses. Above $N = 65$ only a few discrepancies are marginally more than 1 MeV. There is a gradual increase of the error toward the light region. The large, fluctuating error near $N = 60$ is probably due to deviations between our simple effective interaction and the true nuclear force. It is well-known that for $Z \approx 40$ there is a reenforcement of the $N = 56$ subshell closure. Such effects cannot be described within the framework of a single-particle model.

new code could run on any workstation. Thus, we were able to carry out the minimization of the potential energy with respect to ϵ_3 and ϵ_6 without substantial charges on available workstation clusters. Initial minimization calculations were carried out during the visit to Lund University. These were continued in the fall of 1990 during a visit to Institut für Kernchemie, Mainz, which was also sponsored by Gesellschaft für Schwerionenforschung, Darmstadt. The model development and calculations were brought to their current stage at Los Alamos National Laboratory in 1991[9,10,12] and in 1992.[11] This publication was completed at Los Alamos in the summer of 1993, with final editorial changes made at Los Alamos in the summer and fall of 1994.

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EXPLANATION OF TABLE

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

Z Proton number. The mass table is ordered by increasing proton number. The corresponding chemical symbol of each named element is given in parentheses.

N Neutron number.

A Mass number.

ϵ_2 Calculated ground-state quadrupole deformation in the Nilsson perturbed-spheroid parameterization.

ϵ_3 Calculated ground-state octupole deformation in the Nilsson perturbed-spheroid parameterization.

ϵ_4 Calculated ground-state hexadecapole deformation in the Nilsson perturbed-spheroid parameterization.

ϵ_6 Calculated ground-state hexacontatetrapole deformation in the Nilsson perturbed-spheroid parameterization. The value in this column is used in the mass calculation. If $\epsilon_3 \neq 0$ then ϵ_6 was not varied but was instead held fixed at the value that minimizes the macroscopic energy for ^{240}Pu at the listed values of ϵ_2 and ϵ_4.

$\epsilon_6^{\rm sym}$ Calculated ground-state hexacontatetrapole deformation in the Nilsson perturbed-spheroid parameterization for $\epsilon_3 = 0$. This is the optimum value of ϵ_6 when mass asymmetry is *not* considered. It is provided for use in computer codes or other applications that cannot take into account mass-asymmetric shapes.

β_2 Calculated quadrupole deformation of the nuclear ground state expressed in the spherical-harmonics expansion defined by Eq. (37).

β_3 Calculated octupole deformation of the nuclear ground state expressed in the spherical-harmonics expansion defined by Eq. (37).

β_4 Calculated hexadecapole deformation of the nuclear ground state expressed in the spherical-harmonics expansion defined by Eq. (37).

β_6 Calculated hexacontatetrapole deformation of the nuclear ground state expressed in the spherical-harmonics expansion defined by Eq. (37).

$E_{\rm mic}$ Calculated ground-state microscopic energy, given by the difference between the calculated ground-state atomic mass excess and the spherical macroscopic energy calculated from Eq. (40), in our preferred model, the FRDM.

$M_{\rm th}$ Calculated ground-state atomic mass excess, in our preferred model, the FRDM.

$M_{\rm exp}$ Experimental ground-state atomic mass excess in the 1989 midstream evaluation of Audi,[45] with four revisions.

$\sigma_{\rm exp}$ Experimental error associated with the ground-state atomic mass excess in the 1989 midstream evaluation of Audi,[45] with four revisions.

$E_{\rm mic}^{\rm FL}$ Calculated ground-state microscopic energy, given by the difference between the calculated ground-state atomic mass excess and the spherical macroscopic energy calculated from Eq. (62), in the FRLDM.

$M_{\rm th}^{\rm FL}$ Calculated ground-state atomic mass excess, in the FRLDM.

Absence of an entry in ϵ_3, $\epsilon_6^{\rm sym}$, and β_3 means that the ground state is symmetric in shape.

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 8$ (O)																
8	16	0.017		0.093	0.004		0.021		−0.108	−0.003	2.14	−4.84	−4.74	0.000	2.05	−4.15
9	17	0.100		−0.058	0.008		0.107		0.075	0.000	4.61	−0.17	−0.81	0.000	4.51	0.59
10	18	0.017		0.093	0.004		0.021		−0.108	−0.003	3.24	−2.62	−0.78	0.001	3.20	−1.79
11	19	0.133		−0.012	0.002		0.143		0.022	0.000	3.88	2.56	3.33	0.003	3.82	3.33
12	20	0.000		0.093	0.006		0.003		−0.108	−0.003	2.65	2.57	3.80	0.001	2.70	3.39
13	21	0.000		−0.093	0.008		0.003		0.112	−0.005	1.91	8.20	8.05	0.015	2.02	8.97
14	22	0.000		0.082	0.006		0.002		−0.095	−0.004	1.02	10.41	9.44	0.090	1.14	11.06
15	23	0.000	0.011	0.082	0.006	0.006	0.003	−0.014	−0.095	−0.004	0.51	17.72	14.65	0.130	0.66	18.26
16	24	0.000	0.015	0.093	0.006	0.006	0.003	−0.019	−0.108	−0.003	0.32	22.14	18.64	0.420	0.62	22.67
17	25	0.000	0.012	0.082	0.006	0.006	0.003	−0.015	−0.095	−0.004	0.09	30.93			0.35	31.26
18	26	0.000	0.010	0.070	0.005	0.005	0.002	−0.013	−0.081	−0.003	0.06	36.75			0.29	36.88
19	27	0.000	0.011	0.070	0.005	0.005	0.002	−0.014	−0.081	−0.003	−0.13	46.58			0.13	46.57
20	28	0.000		0.070	0.005		0.002		−0.081	−0.003	0.13	53.73			0.44	53.60
21	29	0.000		0.070	0.005		0.002		−0.081	−0.003	0.57	65.03			0.90	64.76
22	30	0.000		0.070	0.005		0.002		−0.081	−0.003	0.59	72.83			0.98	72.45
23	31	0.183		−0.128	0.034		0.198		0.178	0.001	−1.51	82.30			0.35	83.24
24	32	0.200		−0.105	0.030		0.216		0.151	0.001	−1.03	91.32			0.49	91.78
25	33	0.200		−0.035	0.009		0.216		0.061	0.002	0.10	104.63			0.48	103.82
26	34	0.200		0.047	−0.008		0.219		−0.040	−0.002	−0.04	113.70			0.33	112.75
$Z = 9$ (F)																
8	17	0.100		−0.093	0.014		0.108		0.119	0.000	3.62	1.90	1.95	0.000	3.55	2.36
9	18	0.167		−0.152	0.039		0.182		0.207	0.000	5.44	1.21	0.87	0.001	5.36	1.80
10	19	0.250		−0.210	0.075		0.275		0.307	0.008	4.74	−3.08	−1.49	0.000	4.94	−2.13
11	20	0.283		−0.105	0.038		0.307		0.172	0.008	5.99	0.10	−0.02	0.000	6.04	0.93
12	21	0.267		−0.047	0.016		0.290		0.091	0.005	4.69	−0.68	−0.05	0.002	4.75	0.16
13	22	0.233		−0.047	0.014		0.252		0.083	0.003	4.47	3.08	2.79	0.012	4.51	3.84
14	23	−0.200		−0.082	−0.011		−0.202		0.110	−0.007	3.15	4.24	3.33	0.080	3.31	5.03
15	24	0.000		0.093	0.006		0.003		−0.108	−0.003	2.60	9.32	7.71	0.160	2.72	9.98
16	25	0.000		−0.163	0.019		0.008		0.201	−0.010	2.02	12.81	11.33	0.120	2.80	14.02
17	26	0.000		0.093	0.006		0.003		−0.108	−0.003	2.15	19.94	18.56	0.190	2.38	20.47
18	27	−0.200		0.128	0.032		−0.204		−0.127	0.002	1.81	24.99	25.62	0.650	2.41	25.75
19	28	0.000		0.070	0.005		0.002		−0.081	−0.003	1.89	33.22			2.08	33.42
20	29	0.000		0.070	0.005		0.002		−0.081	−0.003	2.06	39.88			2.29	39.98
21	30	0.000		0.082	0.006		0.002		−0.095	−0.004	2.39	49.32			2.76	49.42
22	31	0.200		−0.175	0.052		0.219		0.245	0.002	−0.81	53.55			1.70	55.65
23	32	0.200		−0.163	0.048		0.218		0.229	0.002	−0.92	63.38			1.44	65.20
24	33	0.250		−0.128	0.043		0.271		0.194	0.006	−0.53	72.02			1.36	73.24
25	34	0.250		−0.058	0.018		0.271		0.101	0.005	0.58	83.79			1.26	83.67
26	35	0.233		0.000	0.001		0.253		0.024	0.001	0.95	93.12			1.19	92.45
27	36	0.200		−0.023	0.006		0.216		0.046	0.001	0.56	104.00			0.81	103.25
28	37	−0.250		−0.128	−0.021		−0.245		0.173	−0.012	−2.78	110.24			−0.29	111.63
29	38	0.117		−0.082	0.014		0.126		0.107	0.000	−0.34	124.51			0.59	124.25
$Z = 10$ (Ne)																
8	18	0.100		−0.117	0.019		0.109		0.150	0.000	2.61	3.21	5.32	0.005	2.65	3.48
9	19	0.267		−0.222	0.083		0.294		0.330	0.011	4.89	0.47	1.75	0.001	5.12	1.15
10	20	0.300		−0.280	0.115		0.335		0.428	0.023	4.48	−7.72	−7.04	0.001	5.16	−6.46
11	21	0.300		−0.175	0.070		0.327		0.274	0.012	5.17	−5.87	−5.73	0.001	5.39	−4.98
12	22	0.300		−0.140	0.055		0.326		0.225	0.011	4.30	−8.69	−8.03	0.001	4.62	−7.66
13	23	0.283		−0.082	0.028		0.307		0.141	0.009	4.68	−5.01	−5.16	0.001	4.83	−4.15
14	24	−0.217		−0.117	−0.016		−0.215		0.155	−0.010	3.51	−5.98	−5.95	0.010	3.78	−5.04
15	25	0.000	0.012	0.000	0.000	0.000	0.000	−0.016	0.000	0.000	3.46	−0.98	−2.06	0.040	3.41	−0.42
16	26	0.000		0.012	0.000		0.000		−0.014	0.000	3.51	1.02	0.44	0.070	3.46	1.51
17	27	0.000		0.012	0.000		0.000		−0.014	0.000	3.25	7.25	6.96	0.280	3.21	7.65
18	28	−0.200		0.128	0.032		−0.204		−0.127	0.002	2.60	10.02	11.12	0.390	3.11	10.87
19	29	0.000		0.012	0.000		0.000		−0.014	0.000	2.71	17.83			2.68	18.03
20	30	0.000		0.012	0.000		0.000		−0.014	0.000	2.66	22.44			2.63	22.52

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 10$ (Ne)																
21	31	0.300		−0.152	0.060		0.326		0.241	0.011	0.62	29.13			2.34	30.84
22	32	0.217		−0.198	0.064		0.238		0.281	0.004	−0.92	33.32			1.85	35.96
23	33	0.250		−0.163	0.056		0.272		0.241	0.007	−0.88	42.96			1.31	44.90
24	34	0.283		−0.140	0.052		0.308		0.220	0.009	−0.92	49.56			1.12	51.25
25	35	0.283		−0.082	0.028		0.307		0.141	0.009	0.00	60.85			1.04	61.42
26	36	0.283		−0.023	0.010		0.309		0.065	0.003	0.49	68.78			0.95	68.68
27	37	0.333		0.035	−0.005		0.369		0.006	−0.003	0.27	79.59			0.70	79.37
28	38	−0.300		−0.140	−0.030		−0.292		0.196	−0.014	−2.62	84.85			0.20	86.93
29	39	0.200		−0.082	0.023		0.216		0.121	0.001	−0.23	98.86			0.81	99.07
30	40	0.217		−0.067	0.018		0.234		0.105	0.004	−0.04	107.82			0.85	107.81
31	41	0.400		−0.113	0.056		0.439		0.226	0.022	−1.07	118.93			1.72	120.75
$Z = 11$ (Na)																
8	19	0.183		−0.117	0.031		0.198		0.163	0.001	2.58	11.47	12.93	0.012	2.70	11.49
9	20	0.283		−0.128	0.048		0.307		0.203	0.008	4.91	6.16	6.84	0.007	4.97	6.40
10	21	0.300		−0.175	0.070		0.327		0.274	0.012	4.47	−2.82	−2.19	0.002	4.68	−2.24
11	22	0.333		−0.070	0.030		0.364		0.141	0.010	5.14	−4.93	−5.18	0.001	5.16	−4.39
12	23	0.333		−0.012	0.010		0.366		0.066	0.003	4.27	−9.82	−9.53	0.001	4.33	−9.16
13	24	0.300		−0.012	0.008		0.328		0.056	0.002	5.62	−7.43	−8.42	0.001	5.64	−6.77
14	25	0.267		−0.012	0.006		0.291		0.047	0.002	4.51	−8.97	−9.36	0.001	4.56	−8.27
15	26	0.267		0.035	−0.006		0.294		−0.012	−0.002	4.66	−5.89	−6.90	0.016	4.69	−5.22
16	27	0.283		0.093	−0.018		0.317		−0.080	−0.010	3.96	−5.18	−5.60	0.040	4.14	−4.41
17	28	0.233		0.058	−0.010		0.257		−0.048	−0.004	3.88	−0.73	−1.14	0.130	3.96	−0.12
18	29	−0.217		0.117	0.030		−0.222		−0.112	0.003	4.16	2.48	2.66	0.140	4.47	3.24
19	30	0.000		0.000	0.000		0.000		0.000	0.000	4.03	8.21	8.29	0.190	3.99	8.55
20	31	0.000		0.000	0.000		0.000		0.000	0.000	3.84	12.25	12.52	0.930	3.80	12.50
21	32	0.350		−0.070	0.032		0.383		0.147	0.011	3.03	18.44	18.37	0.650	3.64	19.24
22	33	0.367		−0.047	0.026		0.403		0.123	0.008	2.37	23.14	25.50	1.500	2.98	23.84
23	34	0.267		−0.105	0.036		0.289		0.168	0.007	1.25	30.00			2.16	30.90
24	35	0.300		−0.082	0.030		0.326		0.147	0.009	1.13	36.19			1.99	36.94
25	36	0.300		−0.023	0.011		0.328		0.070	0.004	1.49	45.38			1.85	45.55
26	37	0.300		0.023	−0.002		0.331		0.011	−0.002	1.35	52.41			1.64	52.41
27	38	0.333		0.058	−0.012		0.371		−0.023	−0.006	0.80	61.44			1.22	61.49
28	39	0.383		0.093	−0.022		0.434		−0.050	−0.013	0.24	68.78			1.02	69.11
29	40	0.200		−0.033	0.008		0.216		0.058	0.002	1.36	80.14			1.65	79.90
30	41	0.233		−0.020	0.006		0.253		0.049	0.003	1.17	88.51			1.47	88.22
31	42	0.400		−0.073	0.037		0.440		0.171	0.018	0.98	99.15			2.50	100.03
32	43	0.375		−0.093	0.044		0.411		0.188	0.016	0.39	107.71			2.36	108.98
33	44	0.400		−0.093	0.046		0.439		0.198	0.021	0.09	118.77			2.18	120.11
$Z = 12$ (Mg)																
8	20	0.133		0.082	−0.008		0.147		−0.091	−0.003	1.85	16.07	17.57	0.027	1.90	15.66
9	21	0.283		−0.035	0.013		0.308		0.080	0.005	4.00	9.86	10.91	0.016	4.04	9.77
10	22	0.300		−0.140	0.055		0.326		0.225	0.011	3.68	−1.50	−0.40	0.002	3.99	−1.07
11	23	0.333		0.000	0.007		0.367		0.050	0.000	4.18	−5.84	−5.47	0.001	4.23	−5.47
12	24	0.333		0.082	−0.018		0.374		−0.053	−0.010	3.54	−14.08	−13.93	0.001	3.65	−13.52
13	25	0.300		0.058	−0.012		0.333		−0.033	−0.005	4.70	−12.52	−13.19	0.001	4.76	−11.94
14	26	−0.317		−0.128	−0.032		−0.310		0.186	−0.013	3.45	−16.39	−16.21	0.001	3.73	−15.53
15	27	0.000	0.012	0.000	0.000	0.000	0.000	−0.016	0.000	0.000	4.94	−12.54	−14.59	0.001	4.89	−11.98
16	28	0.283		0.140	−0.023		0.323		−0.136	−0.020	3.61	−14.50	−15.02	0.002	3.92	−13.60
17	29	0.000	0.011	0.000	0.000	0.000	0.000	−0.015	0.000	0.000	4.77	−9.34	−10.66	0.029	4.73	−8.80
18	30	−0.217		0.117	0.030		−0.222		−0.112	0.003	3.93	−9.14	−9.07	0.170	4.20	−8.35
19	31	0.000		0.000	0.000		0.000		0.000	0.000	4.13	−3.55	−3.35	0.150	4.09	−3.12
20	32	0.000		0.000	0.000		0.000		0.000	0.000	3.81	−1.42	−0.82	0.210	3.78	−1.05
21	33	0.000		0.012	0.000		0.000		−0.014	0.000	4.00	5.36	5.09	0.840	3.97	5.66
22	34	0.367		0.000	0.008		0.406		0.062	0.002	2.87	7.89			3.26	8.54
23	35	0.317		−0.035	0.016		0.347		0.090	0.005	2.28	14.92			2.67	15.49
24	36	0.300		−0.035	0.014		0.328		0.085	0.005	1.78	19.16			2.20	19.67

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 12$ (Mg)																
25	37	0.300		0.012	0.001		0.330		0.025	0.000	1.67	27.56			1.92	27.82
26	38	0.283		0.058	−0.012		0.314		−0.037	−0.004	1.20	32.74			1.56	33.03
27	39	0.333		0.105	−0.023		0.377		−0.081	−0.014	0.28	41.12			1.03	41.73
28	40	−0.300		−0.152	−0.031		−0.290		0.211	−0.016	−1.90	45.42			0.54	47.65
29	41	0.300		0.073	−0.013		0.335		−0.051	−0.009	0.87	58.18			1.39	58.42
30	42	0.242		0.033	−0.004		0.265		−0.015	−0.003	1.00	65.52			1.26	65.44
31	43	0.267		0.060	−0.010		0.296		−0.043	−0.006	1.14	76.28			1.58	76.32
32	44	0.133		0.280	0.003		0.175		−0.317	−0.032	−4.93	78.06			2.06	84.61
33	45	0.383		−0.053	0.028		0.421		0.137	0.012	1.21	95.37			2.39	96.07
34	46	0.267		0.187	−0.027		0.311		−0.195	−0.027	−1.50	101.10			1.90	103.99
35	47	0.417		−0.020	0.018		0.463		0.107	0.009	1.26	115.53			2.22	115.95
$Z = 13$ (Al)																
8	21	0.150		0.070	−0.008		0.165		−0.075	−0.003	1.48	26.48			1.53	25.70
9	22	0.250		−0.035	0.012		0.271		0.072	0.003	3.80	18.04	18.04	0.090	3.81	17.60
10	23	0.283		−0.035	0.013		0.308		0.080	0.005	3.92	6.45	6.77	0.025	3.97	6.35
11	24	0.300		0.000	0.005		0.329		0.040	0.000	4.99	0.40	−0.05	0.004	4.99	0.48
12	25	0.300		0.070	−0.015		0.334		−0.047	−0.006	4.39	−8.45	−8.91	0.001	4.43	−8.15
13	26	0.283		0.047	−0.009		0.313		−0.023	−0.004	5.08	−10.77	−12.21	0.001	5.08	−10.37
14	27	−0.467		−0.140	−0.063		−0.448		0.239	−0.018	3.31	−16.90	−17.20	0.001	3.66	−16.08
15	28	−0.250		−0.047	−0.011		−0.254		0.077	−0.004	4.39	−15.48	−16.85	0.001	4.41	−14.92
16	29	0.000	0.019	0.000	0.000	0.000	0.000	−0.025	0.000	0.000	4.61	−16.44	−18.22	0.001	4.57	−15.92
17	30	−0.200		0.070	0.015		−0.207		−0.063	0.002	4.46	−14.48	−15.87	0.014	4.50	−13.88
18	31	−0.233		0.105	0.027		−0.239		−0.096	0.003	3.99	−14.40	−14.97	0.025	4.15	−13.70
19	32	0.000		0.000	0.000		0.000		0.000	0.000	4.03	−10.76	−11.08	0.150	4.00	−10.27
20	33	0.000		0.000	0.000		0.000		0.000	0.000	3.70	−9.07	−8.59	0.100	3.67	−8.63
21	34	0.000		−0.035	0.002		0.000		0.042	−0.002	3.66	−4.21	−3.21	0.220	3.67	−3.79
22	35	0.200		−0.082	0.023		0.216		0.121	0.001	3.06	−1.54	−0.32	0.430	3.40	−0.84
23	36	0.217		−0.082	0.024		0.234		0.125	0.002	2.96	4.39			3.34	5.06
24	37	0.250		−0.058	0.018		0.271		0.101	0.005	2.49	8.29			2.84	8.88
25	38	0.250		0.000	0.002		0.273		0.027	0.001	2.37	15.18			2.51	15.48
26	39	0.233		0.047	−0.008		0.256		−0.034	−0.003	1.90	20.06			2.10	20.36
27	40	0.175		0.013	−0.002		0.189		−0.003	0.000	2.13	28.15			2.20	28.26
28	41	−0.333		−0.163	−0.038		−0.319		0.231	−0.018	−1.79	30.43			0.61	32.80
29	42	−0.258		−0.067	−0.018		−0.260		0.102	−0.003	0.26	41.11			0.88	41.65
30	43	0.200		0.007	−0.001		0.217		0.009	0.001	1.66	49.47			1.79	49.46
31	44	0.208		0.033	−0.004		0.227		−0.022	−0.003	1.26	58.38			1.43	58.37
32	45	0.050		0.280	0.022		0.082		−0.318	−0.021	−3.54	61.22			2.52	67.05
33	46	−0.300		0.040	0.010		−0.308		−0.011	0.000	1.55	76.24			1.91	76.34
34	47	−0.400		0.133	0.046		−0.405		−0.084	0.011	1.76	84.70			3.13	85.78
35	48	−0.400		0.080	0.025		−0.406		−0.028	0.004	2.41	95.83			3.20	96.30
36	49	−0.417		0.047	0.008		−0.423		0.013	0.003	2.80	105.02			3.54	105.43
37	50	0.425		0.073	−0.018		0.482		−0.010	−0.008	1.93	115.13			2.61	115.46
38	51	0.425		0.113	−0.031		0.487		−0.060	−0.017	1.35	123.86			2.55	124.71
$Z = 14$ (Si)																
8	22	0.000	0.012	0.000	0.000	0.000	0.000	−0.016	0.000	0.000	0.34	33.17			0.27	31.89
9	23	−0.217		−0.117	−0.016		−0.215		0.155	−0.010	2.16	23.60			2.46	23.11
10	24	−0.250		−0.152	−0.022		−0.242		0.202	−0.015	2.38	9.82	10.76	0.019	2.83	9.81
11	25	−0.300		−0.140	−0.030		−0.292		0.196	−0.014	3.51	3.20	3.83	0.010	3.76	3.28
12	26	−0.367		−0.152	−0.044		−0.353		0.226	−0.017	2.39	−8.35	−7.14	0.003	2.78	−7.92
13	27	−0.467		−0.140	−0.063		−0.448		0.239	−0.018	2.78	−12.73	−12.39	0.001	3.11	−12.19
14	28	−0.500		−0.140	−0.070		−0.478		0.250	−0.020	1.91	−21.10	−21.49	0.001	2.42	−20.25
15	29	−0.300		−0.082	−0.022		−0.300		0.128	−0.008	2.84	−20.38	−21.90	0.001	2.95	−19.84
16	30	0.000		0.000	0.000		0.000		0.000	0.000	3.87	−22.48	−24.43	0.001	3.84	−22.03
17	31	0.000		0.000	0.000		0.000		0.000	0.000	4.24	−20.51	−22.95	0.001	4.21	−20.02
18	32	0.000		0.000	0.000		0.000		0.000	0.000	3.74	−22.30	−24.08	0.002	3.71	−21.81
19	33	0.000		0.000	0.000		0.000		0.000	0.000	3.61	−19.29	−20.49	0.016	3.58	−18.80

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 14$ (Si)																
20	34	0.000		0.000	0.000		0.000		0.000	0.000	3.11	−19.51	−19.96	0.013	3.09	−19.04
21	35	0.000		0.012	0.000		0.000		−0.014	0.000	3.38	−14.76	−14.36	0.040	3.36	−14.32
22	36	0.000		0.000	0.000		0.000		0.000	0.000	3.13	−13.37	−12.48	0.260	3.11	−12.97
23	37	0.200		−0.082	0.023		0.216		0.121	0.001	2.91	−7.95	−5.65	0.750	3.23	−7.25
24	38	0.217		−0.058	0.017		0.234		0.094	0.002	2.31	−5.73			2.59	−5.12
25	39	0.233		0.000	0.001		0.253		0.024	0.001	2.25	0.88			2.38	1.28
26	40	−0.600		−0.012	−0.036		−0.592		0.143	−0.009	2.33	4.82			3.62	6.34
27	41	−0.292		−0.120	−0.029		−0.287		0.171	−0.009	−0.28	9.78			0.84	11.07
28	42	−0.333		−0.152	−0.037		−0.321		0.218	−0.017	−1.98	12.87			−0.02	14.95
29	43	−0.283		−0.087	−0.024		−0.282		0.130	−0.005	−0.58	22.62			0.27	23.55
30	44	−0.258		−0.040	−0.011		−0.263		0.071	−0.003	0.35	29.17			0.76	29.61
31	45	−0.250		−0.033	−0.008		−0.255		0.061	−0.004	0.55	38.44			0.90	38.78
32	46	0.000		0.257	0.029		0.023		−0.291	−0.013	−1.97	42.28			2.65	46.85
33	47	−0.300		0.007	−0.003		−0.307		0.026	0.001	1.25	55.21			1.59	55.46
34	48	−0.392		0.093	0.030		−0.398		−0.044	0.005	1.63	62.62			2.49	63.36
35	49	−0.400		0.053	0.012		−0.406		0.002	0.003	1.99	73.26			2.63	73.77
36	50	−0.417		0.027	−0.001		−0.422		0.035	0.002	2.13	81.03			2.87	81.62
37	51	−0.442		0.040	0.005		−0.447		0.029	0.001	2.29	92.00			3.08	92.62
38	52	0.425		0.133	−0.036		0.490		−0.085	−0.023	1.28	99.17			2.78	100.50
39	53	0.433		0.163	−0.043		0.505		−0.118	−0.033	0.33	109.51			2.46	111.46
40	54	0.450		0.187	−0.050		0.531		−0.140	−0.042	−0.11	117.75			2.77	120.47
$Z = 15$ (P)																
8	23	0.000		0.000	0.000		0.000		0.000	0.000	−0.05	45.66			−0.11	43.99
9	24	0.000	0.011	0.000	0.000	0.000	0.000	−0.015	0.000	0.000	1.66	33.78			1.61	32.58
10	25	0.000	0.011	0.000	0.000	0.000	0.000	−0.015	0.000	0.000	3.01	20.52			2.96	19.72
11	26	0.283		0.058	−0.012		0.314		−0.037	−0.004	3.73	11.39			3.76	10.97
12	27	0.000	0.012	0.000	0.000	0.000	0.000	−0.016	0.000	0.000	4.42	1.05	−0.75	0.040	4.38	0.82
13	28	−0.267		−0.047	−0.013		−0.271		0.081	−0.004	3.65	−6.50	−7.16	0.004	3.67	−6.47
14	29	−0.317		−0.070	−0.022		−0.318		0.117	−0.007	2.32	−15.89	−16.95	0.001	2.43	−15.62
15	30	0.000		0.000	0.000		0.000		0.000	0.000	4.00	−17.43	−20.20	0.001	3.97	−17.17
16	31	0.000		0.000	0.000		0.000		0.000	0.000	4.14	−21.94	−24.44	0.001	4.10	−21.59
17	32	0.000		0.000	0.000		0.000		0.000	0.000	4.55	−21.75	−24.31	0.001	4.52	−21.34
18	33	0.000		0.000	0.000		0.000		0.000	0.000	4.07	−24.00	−26.34	0.001	4.05	−23.56
19	34	0.000		0.000	0.000		0.000		0.000	0.000	3.87	−22.78	−24.56	0.005	3.85	−22.32
20	35	0.000		0.000	0.000		0.000		0.000	0.000	3.36	−23.46	−24.86	0.002	3.33	−23.00
21	36	0.000		0.000	0.000		0.000		0.000	0.000	3.56	−20.42	−20.25	0.013	3.53	−19.96
22	37	0.000		0.000	0.000		0.000		0.000	0.000	3.30	−19.44	−19.06	0.120	3.28	−19.00
23	38	0.200		−0.035	0.009		0.216		0.061	0.002	3.46	−15.19			3.55	−14.67
24	39	0.217		−0.012	0.004		0.235		0.035	0.001	2.78	−13.41			2.87	−12.92
25	40	0.225		0.020	−0.003		0.245		−0.003	−0.001	2.65	−8.35			2.74	−7.91
26	41	0.217		0.060	−0.008		0.239		−0.053	−0.006	1.99	−5.48			2.18	−4.98
27	42	0.150		0.033	−0.004		0.163		−0.031	−0.001	1.94	0.62			2.01	0.96
28	43	−0.275		−0.093	−0.025		−0.274		0.136	−0.005	0.01	3.19			0.72	4.13
29	44	0.142		0.013	−0.002		0.153		−0.007	0.000	1.45	11.64			1.49	11.87
30	45	0.183		0.027	−0.004		0.199		−0.019	−0.001	1.64	17.18			1.74	17.43
31	46	0.183		0.040	−0.005		0.199		−0.034	−0.003	1.54	24.86			1.68	25.11
32	47	0.083		0.233	0.011		0.110		−0.265	−0.022	−0.26	29.18			3.05	32.57
33	48	−0.292		0.047	0.013		−0.300		−0.020	0.000	1.89	39.81			2.20	40.17
34	49	−0.317		0.060	0.018		−0.325		−0.029	0.000	1.87	46.60			2.31	47.06
35	50	−0.392		0.080	0.025		−0.399		−0.030	0.004	2.71	56.55			3.35	57.19
36	51	−0.400		0.047	0.008		−0.406		0.008	0.004	3.07	64.34			3.66	64.92
37	52	0.392		0.107	−0.027		0.447		−0.065	−0.016	2.80	73.74			3.67	74.59
38	53	0.400		0.113	−0.028		0.457		−0.069	−0.018	2.76	81.71			3.79	82.71
39	54	0.400		0.133	−0.033		0.460		−0.094	−0.023	1.92	91.06			3.26	92.38
40	55	0.417		0.163	−0.042		0.486		−0.124	−0.032	1.19	98.86			3.23	100.89
41	56	0.450		0.152	−0.041		0.524		−0.097	−0.031	1.30	109.64			3.00	111.34
42	57	0.500		0.163	−0.047		0.588		−0.088	−0.037	1.24	118.58			3.14	120.51

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 16 (S)																
8	24	0.000		0.000	0.000		0.000		0.000	0.000	0.06	55.74			0.01	53.68
9	25	0.000		0.000	0.000		0.000		0.000	0.000	1.86	43.40			1.82	41.85
10	26	0.000	0.023	0.000	0.000	0.000	0.000	−0.031	0.000	0.000	2.94	27.74			2.90	26.63
11	27	0.300		0.117	−0.022		0.340		−0.104	−0.016	2.85	17.22			3.05	16.71
12	28	0.300		0.163	−0.029		0.346		−0.159	−0.024	2.56	3.88	4.20	0.016	2.93	3.81
13	29	0.267		0.128	−0.021		0.303		−0.125	−0.016	3.32	−2.70	−3.16	0.050	3.46	−2.76
14	30	0.000		0.000	0.000		0.000		0.000	0.000	3.73	−12.30	−14.06	0.003	3.69	−12.35
15	31	0.000		0.000	0.000		0.000		0.000	0.000	4.18	−16.59	−19.05	0.002	4.15	−16.49
16	32	0.000		0.000	0.000		0.000		0.000	0.000	4.46	−23.75	−26.02	0.000	4.43	−23.53
17	33	0.000		0.000	0.000		0.000		0.000	0.000	4.56	−24.37	−26.59	0.000	4.53	−24.06
18	34	0.000		0.000	0.000		0.000		0.000	0.000	4.15	−28.32	−29.93	0.000	4.12	−27.95
19	35	0.000		0.000	0.000		0.000		0.000	0.000	3.93	−27.57	−28.85	0.000	3.90	−27.16
20	36	0.000		0.000	0.000		0.000		0.000	0.000	3.39	−29.95	−30.66	0.000	3.37	−29.52
21	37	0.000		0.000	0.000		0.000		0.000	0.000	3.65	−27.26	−26.90	0.000	3.63	−26.82
22	38	0.000		0.000	0.000		0.000		0.000	0.000	3.49	−27.78	−26.86	0.007	3.47	−27.34
23	39	0.183		−0.012	0.003		0.197		0.029	0.001	3.26	−24.30	−23.16	0.050	3.31	−23.81
24	40	0.233		0.020	−0.003		0.254		−0.001	−0.001	2.75	−23.88	−22.51	0.040	2.85	−23.35
25	41	0.242		0.047	−0.007		0.266		−0.032	−0.004	2.58	−19.20			2.71	−18.67
26	42	0.225		0.080	−0.013		0.249		−0.076	−0.006	1.90	−17.79			2.16	−17.16
27	43	0.175		0.053	−0.007		0.191		−0.051	−0.003	1.71	−12.15			1.84	−11.68
28	44	0.000		0.007	0.000		0.000		−0.008	0.000	1.37	−9.38			1.36	−9.09
29	45	0.158		0.033	−0.004		0.171		−0.030	−0.002	1.38	−2.64			1.47	−2.29
30	46	0.200		0.053	−0.007		0.219		−0.048	−0.004	1.72	1.72			1.92	2.17
31	47	0.217		0.067	−0.009		0.239		−0.061	−0.007	1.70	9.22			1.99	9.72
32	48	0.217		0.087	−0.013		0.241		−0.086	−0.007	1.67	14.05			2.15	14.71
33	49	0.225		0.113	−0.017		0.253		−0.115	−0.011	1.64	22.25			2.41	23.19
34	50	0.225		0.133	−0.019		0.255		−0.139	−0.013	1.44	27.65			2.60	28.95
35	51	−0.383		0.107	0.035		−0.389		−0.062	0.007	2.57	37.67			3.37	38.59
36	52	−0.400		0.087	0.028		−0.406		−0.035	0.005	3.11	44.48			3.85	45.33
37	53	0.350		0.087	−0.022		0.394		−0.054	−0.009	3.01	53.87			3.67	54.62
38	54	0.383		0.093	−0.024		0.434		−0.051	−0.011	3.01	60.74			3.79	61.63
39	55	0.400		0.127	−0.032		0.459		−0.086	−0.021	2.85	70.61			4.05	71.90
40	56	0.400		0.140	−0.035		0.461		−0.102	−0.025	2.41	77.62			3.93	79.24
41	57	0.358		0.113	−0.029		0.407		−0.084	−0.014	1.85	87.57			2.96	88.80
42	58	0.500		0.140	−0.040		0.584		−0.060	−0.029	1.87	95.55			3.32	97.14
43	59	0.600		0.140	−0.040		0.711		−0.001	−0.031	3.57	108.22			4.84	109.64
44	60	0.600		0.093	−0.020		0.701		0.058	−0.010	4.11	117.20			5.16	118.44
Z = 17 (Cl)																
8	25	0.000		0.000	0.000		0.000		0.000	0.000	−0.35	70.02			−0.40	67.57
9	26	−0.200		0.187	0.048		−0.199		−0.191	0.005	0.13	54.31			1.09	53.42
10	27	0.000		0.000	0.000		0.000		0.000	0.000	2.37	39.29			2.33	37.86
11	28	0.000	0.019	0.000	0.000	0.000	0.000	−0.025	0.000	0.000	3.73	28.26			3.70	27.22
12	29	0.000	0.021	0.000	0.000	0.000	0.000	−0.028	0.000	0.000	3.89	14.83			3.86	14.11
13	30	−0.217		0.082	0.019		−0.224		−0.073	0.002	3.21	4.91			3.25	4.52
14	31	0.000		0.000	0.000		0.000		0.000	0.000	3.44	−5.38	−7.07	0.050	3.41	−5.62
15	32	0.000		0.000	0.000		0.000		0.000	0.000	3.92	−11.47	−13.33	0.008	3.90	−11.53
16	33	0.000		0.000	0.000		0.000		0.000	0.000	4.32	−19.01	−21.00	0.001	4.29	−18.93
17	34	−0.217		0.128	0.033		−0.221		−0.124	0.003	3.60	−23.12	−24.44	0.000	3.64	−22.87
18	35	−0.250		0.163	0.048		−0.252		−0.155	0.005	3.50	−28.11	−29.01	0.000	3.63	−27.68
19	36	0.000		0.000	0.000		0.000		0.000	0.000	3.90	−28.40	−29.52	0.000	3.88	−28.07
20	37	0.000		0.000	0.000		0.000		0.000	0.000	3.38	−31.19	−31.76	0.000	3.36	−30.82
21	38	−0.017		0.000	0.000		−0.018		0.000	0.000	3.46	−30.27	−29.80	0.000	3.45	−29.87
22	39	0.000		0.000	0.000		0.000		0.000	0.000	3.37	−31.12	−29.80	0.002	3.35	−30.71
23	40	0.142		0.000	0.000		0.153		0.008	0.001	3.61	−28.68	−27.56	0.030	3.62	−28.24
24	41	0.158		0.013	−0.002		0.171		−0.005	0.000	3.15	−28.57	−27.40	0.150	3.18	−28.11
25	42	0.200		0.027	−0.004		0.218		−0.016	−0.001	3.07	−25.27	−24.69	0.170	3.12	−24.80
26	43	0.192		0.060	−0.008		0.211		−0.057	−0.004	2.53	−24.05			2.65	−23.53

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 17 (Cl)																
27	44	0.142		0.033	−0.004		0.154		−0.031	−0.001	2.22	−19.91			2.26	−19.49
28	45	−0.158		0.020	0.003		−0.164		−0.013	0.000	1.01	−18.31			1.05	−17.91
29	46	−0.183		0.040	0.008		−0.190		−0.032	0.000	1.29	−12.63			1.38	−12.21
30	47	−0.200		0.060	0.015		−0.207		−0.052	−0.001	1.53	−8.64			1.72	−8.15
31	48	−0.217		0.073	0.018		−0.224		−0.064	0.001	1.86	−2.06			2.11	−1.52
32	49	−0.242		0.080	0.020		−0.249		−0.067	0.002	1.95	2.62			2.29	3.23
33	50	−0.275		0.093	0.027		−0.282		−0.074	0.002	2.19	9.89			2.64	10.58
34	51	−0.300		0.107	0.032		−0.307		−0.084	0.005	2.22	15.29			2.86	16.14
35	52	−0.350		0.100	0.032		−0.357		−0.063	0.005	2.78	23.56			3.39	24.37
36	53	−0.383		0.100	0.033		−0.389		−0.054	0.006	3.39	30.24			4.09	31.13
37	54	−0.400		0.120	0.040		−0.406		−0.070	0.010	3.53	38.73			4.41	39.79
38	55	0.400		0.073	−0.018		0.452		−0.020	−0.008	4.01	45.90			4.55	46.63
39	56	0.400		0.087	−0.022		0.454		−0.037	−0.011	3.84	54.66			4.45	55.46
40	57	0.400		0.107	−0.027		0.456		−0.062	−0.016	3.60	61.71			4.47	62.77
41	58	−0.258		0.140	0.041		−0.262		−0.129	0.005	1.85	69.42			3.33	71.10
42	59	−0.300		0.175	0.058		−0.302		−0.157	0.008	0.95	76.33			3.27	78.87
43	60	−0.300		0.187	0.062		−0.301		−0.170	0.010	0.42	85.75			3.13	88.70
44	61	−0.300		0.187	0.121		−0.294		−0.174	−0.040	−1.23	92.41			2.84	96.75
45	62	−0.300		0.187	0.118		−0.294		−0.174	−0.038	−1.44	102.60			2.65	106.99
46	63	−0.300		0.163	0.109		−0.297		−0.148	−0.039	−1.13	111.67			2.42	115.56
Z = 18 (Ar)																
9	27	−0.233	0.020	0.222	0.064	0.064	−0.229	−0.021	−0.223	0.009	−0.80	64.71			0.86	64.17
10	28	−0.250		0.245	0.074		−0.243		−0.244	0.012	−0.47	45.81			1.18	45.74
11	29	−0.250		0.175	0.052		−0.251		−0.168	0.006	2.03	35.41			2.63	34.72
12	30	−0.250	0.014	0.175	0.052	0.052	−0.251	−0.014	−0.168	0.006	2.07	19.95			2.60	19.52
13	31	−0.250		0.128	0.036		−0.255		−0.117	0.004	2.65	10.79			2.84	10.32
14	32	−0.267		0.128	0.038		−0.272		−0.114	0.004	2.10	−2.12	−2.18	0.050	2.29	−2.36
15	33	0.000		0.000	0.000		0.000		0.000	0.000	3.51	−7.76	−9.38	0.030	3.49	−8.01
16	34	0.000		0.000	0.000		0.000		0.000	0.000	3.95	−17.03	−18.38	0.003	3.92	−17.11
17	35	−0.250		0.163	0.048		−0.252		−0.155	0.005	3.24	−22.48	−23.05	0.001	3.37	−22.28
18	36	0.000		0.000	0.000		0.000		0.000	0.000	3.58	−29.56	−30.23	0.000	3.55	−29.40
19	37	0.000		0.000	0.000		0.000		0.000	0.000	3.31	−30.96	−30.95	0.001	3.29	−30.72
20	38	0.000		0.000	0.000		0.000		0.000	0.000	2.77	−35.38	−34.72	0.001	2.75	−35.09
21	39	−0.017		0.000	0.000		−0.018		0.000	0.000	2.95	−34.77	−33.24	0.005	2.93	−34.43
22	40	0.000		0.000	0.000		0.000		0.000	0.000	3.49	−36.53	−35.04	0.001	3.47	−36.16
23	41	0.000		0.000	0.000		0.000		0.000	0.000	3.81	−34.39	−33.07	0.001	3.79	−34.01
24	42	0.000		0.000	0.000		0.000		0.000	0.000	3.48	−35.62	−34.42	0.040	3.47	−35.23
25	43	0.000		0.000	0.000		0.000		0.000	0.000	3.18	−32.88	−31.97	0.070	3.17	−32.48
26	44	0.000		0.000	0.000		0.000		0.000	0.000	2.42	−33.30	−32.26	0.020	2.41	−32.91
27	45	−0.175		0.053	0.011		−0.181		−0.048	0.000	1.57	−30.03	−29.72	0.060	1.66	−29.55
28	46	0.000	0.011	0.000	0.000	0.000	0.000	−0.015	0.000	0.000	1.15	−28.99	−29.72	0.040	1.14	−28.62
29	47	−0.183		0.053	0.012		−0.190		−0.047	−0.001	1.01	−24.03	−25.91	0.100	1.13	−23.55
30	48	−0.200		0.073	0.018		−0.207		−0.067	0.000	1.35	−21.24			1.58	−20.67
31	49	−0.217		0.087	0.022		−0.223		−0.079	0.001	1.73	−14.88			2.04	−14.24
32	50	−0.242		0.100	0.027		−0.248		−0.089	0.002	1.79	−11.47			2.24	−10.71
33	51	−0.275		0.113	0.033		−0.281		−0.096	0.004	2.01	−4.48			2.58	−3.62
34	52	−0.300		0.127	0.037		−0.306		−0.105	0.008	2.03	−0.29			2.80	0.76
35	53	−0.333		0.113	0.036		−0.339		−0.082	0.006	2.39	7.56			3.06	8.50
36	54	−0.350		0.093	0.030		−0.357		−0.056	0.004	2.78	12.86			3.39	13.72
37	55	−0.300		0.100	0.030		−0.307		−0.076	0.004	2.00	20.22			2.63	21.10
38	56	−0.233		0.133	0.038		−0.237		−0.126	0.002	1.17	24.98			2.28	26.33
39	57	−0.225		0.133	0.037		−0.229		−0.128	0.002	1.58	34.13			2.73	35.53
40	58	−0.250		0.133	0.039		−0.255		−0.123	0.003	1.73	40.49			2.96	41.98
41	59	−0.267		0.152	0.046		−0.271		−0.140	0.006	1.27	49.31			2.86	51.18
42	60	−0.283		0.175	0.056		−0.285		−0.161	0.008	0.74	55.56			2.93	58.04
43	61	−0.283		0.175	0.101		−0.280		−0.164	−0.031	−0.24	64.38			2.65	67.58
44	62	−0.300		0.198	0.126		−0.292		−0.186	−0.040	−1.60	70.32			2.55	74.81

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 18 (Ar)																
45	63	−0.300		0.187	0.120		−0.294		−0.174	−0.039	−1.62	80.57			2.26	84.81
46	64	−0.300		0.175	0.115		−0.296		−0.161	−0.040	−1.59	88.39			2.12	92.50
47	65	−0.300		0.152	0.098		−0.299		−0.136	−0.034	−1.24	99.44			1.67	102.78
48	66	0.108		0.040	−0.016		0.116		−0.044	0.011	0.03	108.94			0.29	109.69
49	67	0.067		0.027	−0.007		0.072		−0.031	0.005	−0.45	119.56			−0.34	120.21
Z = 19 (K)																
10	29	0.000		0.000	0.000		0.000		0.000	0.000	1.42	61.63			1.39	59.57
11	30	0.000		0.000	0.000		0.000		0.000	0.000	2.63	48.08			2.60	46.47
12	31	0.000		0.000	0.000		0.000		0.000	0.000	2.68	32.16			2.65	30.91
13	32	0.000		0.000	0.000		0.000		0.000	0.000	2.67	20.62			2.64	19.69
14	33	0.000		0.000	0.000		0.000		0.000	0.000	2.30	7.40			2.27	6.74
15	34	0.000		0.000	0.000		0.000		0.000	0.000	2.68	−0.99			2.66	−1.42
16	35	0.000		0.000	0.000		0.000		0.000	0.000	3.15	−10.68	−11.17	0.020	3.13	−10.93
17	36	0.000		0.000	0.000		0.000		0.000	0.000	3.34	−16.91	−17.42	0.008	3.32	−17.00
18	37	0.000		0.000	0.000		0.000		0.000	0.000	3.16	−24.93	−24.80	0.000	3.14	−24.90
19	38	−0.017		0.000	0.000		−0.018		0.000	0.000	2.80	−28.87	−28.80	0.001	2.78	−28.74
20	39	0.000		0.000	0.000		0.000		0.000	0.000	2.37	−34.39	−33.81	0.001	2.35	−34.19
21	40	−0.033		0.000	0.000		−0.035		0.000	0.000	2.49	−35.36	−33.53	0.001	2.48	−35.10
22	41	0.000		0.000	0.000		0.000		0.000	0.000	2.76	−37.78	−35.56	0.001	2.75	−37.47
23	42	0.000		0.000	0.000		0.000		0.000	0.000	3.22	−36.97	−35.02	0.001	3.21	−36.63
24	43	0.000		0.000	0.000		0.000		0.000	0.000	2.91	−38.55	−36.59	0.009	2.89	−38.19
25	44	−0.008		0.000	0.000		−0.008		0.000	0.000	2.50	−37.32	−35.81	0.040	2.49	−36.95
26	45	−0.008		0.000	0.000		−0.008		0.000	0.000	1.76	−38.06	−36.61	0.010	1.75	−37.68
27	46	−0.067		0.020	0.003		−0.070		−0.021	−0.001	1.33	−35.71	−35.42	0.016	1.33	−35.33
28	47	−0.008		0.000	0.000		−0.008		0.000	0.000	0.46	−35.44	−35.69	0.008	0.44	−35.07
29	48	−0.067		0.013	0.002		−0.070		−0.013	−0.001	0.48	−31.61	−32.12	0.024	0.49	−31.24
30	49	−0.075		0.020	0.003		−0.079		−0.021	−0.001	1.07	−28.86	−30.32	0.070	1.08	−28.49
31	50	−0.083		0.020	0.003		−0.087		−0.020	−0.001	1.69	−23.51	−25.52	0.300	1.71	−23.14
32	51	−0.083		0.027	0.003		−0.087		−0.028	0.000	2.33	−19.78			2.36	−19.41
33	52	−0.142		0.033	0.004		−0.148		−0.030	0.001	2.78	−13.77			2.84	−13.37
34	53	−0.317		0.113	0.035		−0.323		−0.086	0.006	3.09	−9.53			3.63	−8.66
35	54	−0.367		0.120	0.040		−0.373		−0.080	0.008	3.60	−2.68			4.22	−1.75
36	55	−0.392		0.113	0.038		−0.398		−0.065	0.008	4.12	2.52			4.78	3.48
37	56	−0.133		0.073	0.012		−0.138		−0.076	0.001	3.49	8.92			3.78	9.51
38	57	−0.125		0.080	0.012		−0.129		−0.085	0.001	3.30	14.11			3.68	14.80
39	58	−0.150	0.013	0.080	0.015	0.015	−0.155	−0.016	−0.081	0.001	3.45	21.93			3.85	22.64
40	59	−0.008		0.000	0.000		−0.008		0.000	0.000	2.51	27.01			2.50	27.31
41	60	−0.267		0.133	0.039		−0.272		−0.119	0.005	2.17	34.92			3.26	36.33
42	61	−0.283		0.152	0.083		−0.283		−0.138	−0.024	1.42	40.78			3.26	42.96
43	62	−0.300		0.163	0.100		−0.298		−0.147	−0.032	0.81	48.96			3.13	51.64
44	63	−0.300		0.163	0.106		−0.297		−0.148	−0.037	0.29	55.59			2.90	58.58
45	64	0.100		−0.027	0.011		0.107		0.037	−0.007	1.62	66.21			1.74	66.74
46	65	0.100		−0.007	0.032		0.107		0.014	−0.031	0.74	72.98			1.01	73.70
47	66	0.100		0.013	0.011		0.107		−0.011	−0.012	0.45	82.44			0.52	82.99
48	67	0.083		0.033	−0.011		0.089		−0.037	0.008	−0.25	89.86			−0.10	90.53
49	68	0.058		0.020	−0.006		0.062		−0.023	0.005	−0.90	99.39			−0.84	100.01
50	69	−0.050		0.000	0.002		−0.053		0.001	−0.002	−1.84	107.00			−1.83	107.63
51	70	−0.067		0.000	−0.002		−0.070		0.002	0.002	−1.98	117.43			−1.97	118.12
Z = 20 (Ca)																
10	30	0.000		0.000	0.000		0.000		0.000	0.000	1.56	72.94			1.53	70.57
11	31	0.000		0.000	0.000		0.000		0.000	0.000	2.57	58.76			2.55	56.86
12	32	0.000		0.000	0.000		0.000		0.000	0.000	2.42	40.83			2.40	39.33
13	33	0.000		0.000	0.000		0.000		0.000	0.000	2.35	28.78			2.32	27.62
14	34	0.000		0.000	0.000		0.000		0.000	0.000	1.81	13.66			1.79	12.79
15	35	0.000		0.000	0.000		0.000		0.000	0.000	2.28	4.90	4.44	0.070	2.25	4.27
16	36	0.000		0.000	0.000		0.000		0.000	0.000	2.71	−6.51	−6.44	0.040	2.69	−6.93

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 20 (Ca)																
17	37	0.000		0.000	0.000		0.000		0.000	0.000	2.93	−13.13	−13.16	0.022	2.91	−13.39
18	38	0.000		0.000	0.000		0.000		0.000	0.000	2.66	−22.88	−22.06	0.005	2.64	−22.99
19	39	0.000		0.000	0.000		0.000		0.000	0.000	2.31	−27.99	−27.28	0.002	2.29	−27.99
20	40	0.000		0.000	0.000		0.000		0.000	0.000	2.27	−35.44	−34.85	0.001	2.25	−35.34
21	41	0.000		0.000	0.000		0.000		0.000	0.000	2.54	−36.65	−35.14	0.001	2.53	−36.48
22	42	0.000		0.000	0.000		0.000		0.000	0.000	2.52	−40.86	−38.55	0.001	2.51	−40.63
23	43	0.000		0.000	0.000		0.000		0.000	0.000	3.00	−40.40	−38.41	0.001	2.99	−40.12
24	44	0.000		0.000	0.000		0.000		0.000	0.000	2.62	−43.48	−41.47	0.001	2.61	−43.17
25	45	0.000		0.000	0.000		0.000		0.000	0.000	2.34	−42.47	−40.81	0.001	2.33	−42.14
26	46	0.000	0.018	0.000	0.000	0.000	0.000	−0.024	0.000	0.000	1.48	−44.70	−43.13	0.002	1.47	−44.36
27	47	0.000		0.000	0.000		0.000		0.000	0.000	0.67	−43.06	−42.34	0.002	0.66	−42.71
28	48	0.000		0.000	0.000		0.000		0.000	0.000	0.12	−43.79	−44.21	0.004	0.11	−43.43
29	49	0.000		0.000	0.000		0.000		0.000	0.000	0.10	−40.30	−41.29	0.004	0.09	−39.95
30	50	0.000	0.011	0.000	0.000	0.000	0.000	−0.015	0.000	0.000	0.86	−38.65	−39.57	0.009	0.85	−38.30
31	51	0.000		0.000	0.000		0.000		0.000	0.000	1.50	−33.55	−35.01	0.080	1.49	−33.21
32	52	0.000		0.000	0.000		0.000		0.000	0.000	2.13	−31.07			2.12	−30.73
33	53	0.000		0.000	0.000		0.000		0.000	0.000	2.48	−25.39			2.48	−25.06
34	54	0.000		0.000	0.000		0.000		0.000	0.000	2.68	−22.46			2.67	−22.13
35	55	0.000		0.000	0.000		0.000		0.000	0.000	2.79	−16.25			2.78	−15.93
36	56	−0.017		0.000	0.000		−0.018		0.000	0.000	2.68	−12.82			2.67	−12.49
37	57	−0.067		0.033	0.004		−0.070		−0.036	−0.001	3.39	−5.29			3.45	−4.91
38	58	−0.008	0.060	0.000	0.000	0.000	−0.007	−0.080	0.002	0.002	2.41	−1.99			2.50	−1.57
39	59	−0.008	0.059	0.000	0.000	0.000	−0.007	−0.079	0.001	0.002	2.52	5.59			2.61	6.02
40	60	0.000		0.000	0.000		0.000		0.000	0.000	2.44	10.47			2.43	10.80
41	61	−0.017	0.091	0.000	0.004	0.004	−0.014	−0.122	0.003	0.001	1.68	17.78			1.94	18.39
42	62	0.008		0.000	−0.002		0.008		0.000	0.002	1.42	23.10			1.42	23.46
43	63	0.042		−0.007	0.001		0.045		0.009	−0.001	1.64	31.94			1.64	32.33
44	64	0.042		−0.007	−0.001		0.045		0.009	0.001	1.07	37.53			1.08	37.94
45	65	0.067		−0.020	0.004		0.071		0.026	−0.002	0.79	46.38			0.84	46.86
46	66	0.058		0.000	0.004		0.062		0.001	−0.004	0.15	52.43			0.16	52.90
47	67	0.075		0.007	0.008		0.080		−0.006	−0.008	−0.42	61.47			−0.38	62.00
48	68	0.067		0.027	−0.011		0.072		−0.031	0.009	−1.17	67.90			−1.06	68.54
49	69	0.050		0.013	−0.005		0.053		−0.015	0.004	−1.85	77.27			−1.83	77.88
50	70	0.025		0.000	0.001		0.027		0.000	−0.001	−3.12	83.65			−3.12	84.28
51	71	0.050		−0.013	0.000		0.053		0.017	0.001	−2.64	94.58			−2.62	95.29
52	72	0.058		−0.040	−0.014		0.063		0.050	0.018	−2.57	102.73			−2.27	103.77
53	73	0.058		−0.013	−0.006		0.062		0.017	0.007	−2.48	113.66			−2.44	114.51
Z = 21 (Sc)																
11	32	0.400		−0.047	0.030		0.441		0.136	0.010	0.78	70.75			1.17	68.99
12	33	0.000		0.000	0.000		0.000		0.000	0.000	2.46	54.23			2.44	52.47
13	34	0.000		0.000	0.000		0.000		0.000	0.000	2.28	40.37			2.26	38.98
14	35	0.000		0.000	0.000		0.000		0.000	0.000	1.97	25.05			1.95	23.97
15	36	0.000		0.000	0.000		0.000		0.000	0.000	2.46	14.67			2.44	13.85
16	37	0.000		0.000	0.000		0.000		0.000	0.000	2.97	2.91			2.95	2.31
17	38	−0.017		0.000	0.000		−0.018		0.000	0.000	3.03	−5.46			3.01	−5.87
18	39	0.000		0.000	0.000		0.000		0.000	0.000	2.92	−15.45	−14.17	0.024	2.91	−15.70
19	40	−0.025		0.000	0.000		−0.026		0.000	0.000	2.47	−22.21	−20.53	0.004	2.46	−22.33
20	41	0.000		0.000	0.000		0.000		0.000	0.000	2.58	−29.89	−28.64	0.001	2.57	−29.91
21	42	−0.025		0.000	0.000		−0.026		0.000	0.000	2.62	−33.58	−32.12	0.001	2.61	−33.51
22	43	0.000		0.000	0.000		0.000		0.000	0.000	2.77	−38.70	−36.19	0.002	2.76	−38.55
23	44	0.000		0.000	0.000		0.000		0.000	0.000	3.09	−39.83	−37.82	0.002	3.08	−39.63
24	45	0.000		0.000	0.000		0.000		0.000	0.000	2.67	−43.29	−41.07	0.001	2.66	−43.04
25	46	−0.008		0.000	0.000		−0.008		0.000	0.000	2.28	−43.77	−41.76	0.001	2.27	−43.50
26	47	−0.008		0.000	0.000		−0.008		0.000	0.000	1.32	−46.43	−44.33	0.002	1.31	−46.13
27	48	−0.042		0.000	0.000		−0.044		0.001	0.000	0.95	−45.66	−44.49	0.005	0.94	−45.34
28	49	−0.008		0.000	0.000		−0.008		0.000	0.000	0.21	−46.89	−46.56	0.004	0.20	−46.56
29	50	−0.033		0.000	0.000		−0.035		0.000	0.000	0.33	−44.53	−44.53	0.016	0.32	−44.20

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 21 (Sc)																
30	51	−0.025		0.000	0.000		−0.026		0.000	0.000	0.86	−43.40	−43.22	0.020	0.85	−43.06
31	52	−0.033		0.000	0.000		−0.035		0.000	0.000	1.67	−39.36			1.66	−39.02
32	53	−0.050		−0.013	0.000		−0.052		0.016	−0.001	2.60	−36.84			2.60	−36.49
33	54	0.083		−0.020	0.002		0.088		0.027	0.000	3.27	−32.03			3.28	−31.67
34	55	−0.075		−0.013	−0.001		−0.078		0.017	0.000	3.64	−29.17			3.65	−28.82
35	56	−0.100		−0.007	−0.001		−0.104		0.012	0.000	4.01	−23.84			4.02	−23.49
36	57	−0.092		0.007	0.001		−0.096		−0.005	0.000	4.09	−20.44			4.11	−20.09
37	58	−0.100		0.020	0.003		−0.105		−0.019	−0.001	4.23	−14.59			4.26	−14.22
38	59	−0.075		0.020	0.003		−0.079		−0.021	−0.001	3.76	−10.99			3.79	−10.62
39	60	−0.042	0.059	0.000	0.000	0.000	−0.042	−0.078	0.002	0.002	3.52	−4.83			3.60	−4.40
40	61	−0.017	0.085	0.000	0.001	0.001	−0.015	−0.114	0.003	0.004	2.56	−1.02			2.75	−0.48
41	62	−0.050	0.104	−0.013	0.000	0.000	−0.047	−0.140	0.021	0.006	3.22	6.67			3.54	7.36
42	63	0.050		−0.020	−0.011		0.053		0.025	0.012	2.82	11.68			2.88	12.11
43	64	0.067		−0.040	−0.029		0.073		0.051	0.034	2.49	18.97			2.79	19.66
44	65	0.083		−0.040	−0.022		0.090		0.051	0.027	1.90	24.37			2.16	25.05
45	66	0.108		−0.053	−0.003		0.116		0.070	0.011	1.52	32.16			1.80	32.88
46	67	0.108		−0.027	0.018		0.115		0.038	−0.014	0.79	37.96			0.94	38.58
47	68	0.100		−0.007	0.000		0.107		0.013	0.001	0.25	46.09			0.28	46.63
48	69	0.083		0.013	−0.020		0.089		−0.013	0.019	−0.55	52.34			−0.44	52.99
49	70	0.058		0.007	−0.012		0.062		−0.007	0.011	−1.27	60.76			−1.23	61.38
50	71	0.050		−0.013	−0.006		0.053		0.017	0.007	−1.93	67.62			−1.89	68.28
51	72	0.058		−0.033	−0.015		0.062		0.041	0.018	−2.08	77.04			−1.88	77.92
52	73	0.083		−0.060	−0.032		0.092		0.077	0.041	−2.15	84.94			−1.32	86.50
53	74	0.083		−0.047	−0.039		0.091		0.061	0.046	−2.17	94.90			−1.35	96.50
54	75	0.092		−0.027	−0.041		0.100		0.036	0.045	−1.72	103.72			−1.03	105.26
55	76	0.117		−0.040	−0.005		0.126		0.055	0.012	−0.86	114.94			−0.57	116.15
Z = 22 (Ti)																
12	34	0.400		0.000	0.010		0.444		0.074	0.003	0.98	63.45			1.25	61.75
13	35	0.200		−0.128	0.036		0.217		0.181	0.002	1.24	49.64			1.89	48.69
14	36	0.000		0.000	0.000		0.000		0.000	0.000	1.79	33.53			1.77	32.23
15	37	0.000		0.000	0.000		0.000		0.000	0.000	2.17	22.63			2.15	21.61
16	38	0.000		0.000	0.000		0.000		0.000	0.000	2.62	9.21			2.60	8.43
17	39	0.000		0.000	0.000		0.000		0.000	0.000	2.83	0.58			2.81	0.01
18	40	0.000		0.000	0.000		0.000		0.000	0.000	3.27	−10.40	−9.06	0.016	3.26	−10.81
19	41	0.000		0.000	0.000		0.000		0.000	0.000	2.89	−17.48	−15.69	0.013	2.88	−17.74
20	42	0.000		0.000	0.000		0.000		0.000	0.000	2.77	−26.90	−25.12	0.006	2.75	−27.03
21	43	0.000		0.000	0.000		0.000		0.000	0.000	2.96	−31.52	−29.32	0.007	2.95	−31.55
22	44	0.000		0.000	0.000		0.000		0.000	0.000	3.04	−38.83	−37.55	0.001	3.03	−38.78
23	45	0.000		0.000	0.000		0.000		0.000	0.000	3.43	−40.25	−39.01	0.001	3.41	−40.14
24	46	0.000	0.018	0.000	0.000	0.000	0.000	−0.024	0.000	0.000	3.02	−45.10	−44.13	0.001	3.01	−44.93
25	47	0.000		0.000	0.000		0.000		0.000	0.000	2.68	−45.86	−44.93	0.001	2.67	−45.65
26	48	0.000		0.000	0.000		0.000		0.000	0.000	1.69	−49.89	−48.49	0.001	1.68	−49.64
27	49	0.000		0.000	0.000		0.000		0.000	0.000	0.63	−50.13	−48.56	0.001	0.62	−49.86
28	50	0.000	0.015	0.000	0.000	0.000	0.000	−0.020	0.000	0.000	0.24	−52.30	−51.43	0.001	0.23	−52.01
29	51	0.000		0.000	0.000		0.000		0.000	0.000	0.26	−50.34	−49.73	0.001	0.25	−50.04
30	52	0.000	0.016	0.000	0.000	0.000	0.000	−0.021	0.000	0.000	1.03	−50.22	−49.47	0.007	1.02	−49.90
31	53	0.000		0.000	0.000		0.000		0.000	0.000	1.73	−46.56	−46.82	0.100	1.72	−46.24
32	54	0.000		0.000	0.000		0.000		0.000	0.000	2.37	−45.53			2.37	−45.20
33	55	0.125		0.013	−0.002		0.134		−0.009	0.000	2.82	−41.20			2.84	−40.85
34	56	0.125		0.020	−0.003		0.135		−0.018	0.000	3.11	−39.58			3.15	−39.21
35	57	0.125		0.033	−0.005		0.135		−0.033	0.000	3.71	−34.26			3.77	−33.87
36	58	−0.100		0.013	0.002		−0.105		−0.011	−0.001	3.66	−32.12			3.68	−31.76
37	59	−0.100		0.027	0.003		−0.105		−0.027	0.000	3.81	−26.47			3.85	−26.09
38	60	−0.075		0.027	0.003		−0.079		−0.029	0.000	3.36	−23.95			3.40	−23.57
39	61	−0.017		0.000	−0.001		−0.018		0.000	0.001	3.11	−18.00			3.11	−17.65
40	62	0.000		0.000	−0.002		0.000		0.000	0.002	2.71	−14.68			2.71	−14.33
41	63	−0.042	0.063	−0.007	0.000	0.001	−0.042	−0.084	0.011	0.002	3.00	−7.55			3.11	−7.08

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 22$ (Ti)																
42	64	0.025		0.000	−0.001		0.027		0.000	0.001	2.10	−4.07			2.09	−3.69
43	65	0.058		−0.020	−0.007		0.062		0.025	0.009	2.31	3.59			2.35	4.03
44	66	0.133		−0.080	−0.026		0.147		0.108	0.044	1.46	7.75			2.23	8.93
45	67	0.142		−0.073	−0.007		0.154		0.099	0.023	1.14	15.43			1.67	16.40
46	68	0.142		−0.047	0.017		0.152		0.067	−0.008	0.54	20.41			0.82	21.16
47	69	0.117		−0.007	0.005		0.125		0.014	−0.004	0.00	28.39			0.05	28.93
48	70	0.092		0.020	−0.016		0.099		−0.021	0.014	−0.86	33.65			−0.76	34.28
49	71	0.058		0.013	−0.004		0.062		−0.014	0.003	−1.69	41.82			−1.66	42.42
50	72	0.042		0.000	0.001		0.045		0.001	−0.001	−2.65	47.47			−2.65	48.09
51	73	0.058		−0.027	−0.008		0.062		0.034	0.010	−2.41	57.16			−2.31	57.93
52	74	0.108		−0.080	−0.025		0.119		0.105	0.040	−2.23	64.43			−1.19	66.18
53	75	0.117		−0.067	−0.026		0.128		0.089	0.039	−1.90	74.62			−1.03	76.26
54	76	0.133		−0.067	−0.006		0.144		0.090	0.020	−1.25	82.79			−0.58	84.29
55	77	0.150		−0.060	0.015		0.161		0.084	−0.002	−0.61	93.69			−0.06	95.13
56	78	0.158		−0.040	0.021		0.169		0.061	−0.012	0.14	102.38			0.54	103.73
57	79	0.208		−0.127	−0.015		0.233		0.184	0.061	−1.12	111.73			1.70	115.59
58	80	0.225		−0.113	−0.009		0.249		0.168	0.051	−0.42	120.75			1.98	124.26
$Z = 23$ (V)																
13	36	0.217		−0.117	0.035		0.235		0.171	0.003	0.81	62.54			1.42	61.32
14	37	0.200		−0.117	0.033		0.216		0.167	0.002	1.03	45.71			1.56	44.76
15	38	0.200		−0.070	0.020		0.215		0.106	0.001	2.01	33.84			2.16	32.81
16	39	0.200		−0.047	0.013		0.216		0.076	0.001	2.29	19.86			2.37	19.01
17	40	0.158		−0.013	0.003		0.170		0.027	0.000	3.01	10.22			3.01	9.51
18	41	0.000		0.000	0.000		0.000		0.000	0.000	3.70	−0.89			3.69	−1.44
19	42	0.000		0.000	0.000		0.000		0.000	0.000	3.34	−9.43			3.32	−9.82
20	43	0.000		0.000	0.000		0.000		0.000	0.000	3.23	−19.20			3.21	−19.46
21	44	0.000		0.000	0.000		0.000		0.000	0.000	3.39	−25.27	−23.72	0.030	3.38	−25.42
22	45	0.000		0.000	0.000		0.000		0.000	0.000	3.46	−32.96	−31.87	0.017	3.45	−33.01
23	46	0.000	0.018	0.000	0.000	0.000	0.000	−0.024	0.000	0.000	3.85	−36.43	−37.07	0.002	3.85	−36.40
24	47	0.000		0.000	0.000		0.000		0.000	0.000	3.36	−42.36	−42.00	0.001	3.35	−42.27
25	48	0.183		−0.053	0.012		0.197		0.081	0.002	1.88	−45.59	−44.47	0.003	1.93	−45.40
26	49	0.000		0.000	0.000		0.000		0.000	0.000	1.99	−48.85	−47.96	0.001	1.98	−48.66
27	50	0.100		−0.007	0.001		0.107		0.013	0.000	0.81	−50.49	−49.22	0.001	0.81	−50.26
28	51	0.000		0.000	0.000		0.000		0.000	0.000	0.54	−52.84	−52.20	0.001	0.53	−52.60
29	52	0.000	0.019	0.000	0.000	0.000	0.000	−0.025	0.000	0.000	0.54	−52.14	−51.44	0.001	0.54	−51.88
30	53	0.000		0.000	0.000		0.000		0.000	0.000	1.36	−52.25	−51.85	0.003	1.35	−51.98
31	54	0.158		−0.033	0.009		0.170		0.052	−0.001	2.12	−49.73	−49.89	0.015	2.17	−49.39
32	55	0.158		−0.027	0.007		0.170		0.044	−0.001	2.53	−49.21	−49.15	0.100	2.58	−48.85
33	56	0.167		0.007	−0.001		0.180		0.003	0.000	3.26	−45.76			3.29	−45.42
34	57	0.167		0.013	−0.002		0.181		−0.004	0.000	3.49	−44.44			3.54	−44.08
35	58	0.150		0.033	−0.004		0.163		−0.031	−0.001	4.03	−40.31			4.08	−39.94
36	59	0.150		0.013	−0.002		0.162		−0.006	0.000	3.88	−38.49			3.92	−38.13
37	60	−0.125		0.033	0.004		−0.130		−0.032	0.001	4.41	−33.56			4.46	−33.18
38	61	−0.100		0.033	0.013		−0.104		−0.034	−0.008	4.03	−31.18			4.08	−30.79
39	62	−0.042		0.013	0.001		−0.044		−0.014	0.000	3.89	−26.17			3.90	−25.83
40	63	0.017		0.000	0.002		0.018		0.000	−0.002	3.26	−23.29			3.26	−22.94
41	64	0.050		−0.013	−0.008		0.053		0.017	0.009	3.84	−16.89			3.85	−16.51
42	65	0.050		−0.007	0.001		0.053		0.009	−0.001	3.04	−13.49			3.04	−13.11
43	66	0.142		−0.073	−0.017		0.155		0.100	0.034	2.25	−7.82			2.72	−6.95
44	67	0.150		−0.080	−0.001		0.163		0.110	0.019	2.15	−3.08			2.66	−2.17
45	68	0.150		−0.067	0.014		0.161		0.093	0.000	1.59	3.40			1.96	4.19
46	69	0.158		−0.047	0.026		0.169		0.070	−0.016	0.85	8.08			1.16	8.84
47	70	0.150		−0.027	0.007		0.161		0.043	−0.001	0.33	15.15			0.45	15.76
48	71	0.117		0.013	−0.012		0.126		−0.011	0.010	−0.33	20.46			−0.26	21.04
49	72	0.075		0.007	−0.004		0.080		−0.006	0.003	−1.25	27.63			−1.23	28.20
50	73	0.050		−0.007	0.003		0.053		0.009	−0.003	−2.04	33.32			−2.03	33.92
51	74	0.083		−0.047	−0.006		0.089		0.060	0.012	−1.85	42.08			−1.61	42.96

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 23 (V)																
52	75	0.125		−0.073	−0.001		0.135		0.097	0.015	−1.49	49.41			−0.89	50.69
53	76	0.142		−0.067	0.012		0.152		0.092	0.002	−1.05	58.85			−0.53	60.11
54	77	0.150		−0.060	0.023		0.160		0.084	−0.010	−0.63	66.68			−0.10	67.99
55	78	0.167		−0.047	0.038		0.179		0.072	−0.027	−0.40	76.33			0.20	77.78
56	79	0.217		−0.120	−0.002		0.240		0.175	0.045	−0.10	84.45			1.97	87.43
57	80	0.225		−0.113	0.002		0.247		0.167	0.039	−0.03	94.33			1.83	97.18
58	81	0.233		−0.100	0.006		0.255		0.152	0.031	0.32	102.91			1.91	105.55
59	82	0.258		−0.100	0.020		0.281		0.158	0.020	0.42	113.18			1.99	115.89
60	83	0.267		−0.093	0.021		0.290		0.151	0.018	0.88	122.23			2.38	124.95
Z = 24 (Cr)																
14	38	0.217		−0.093	0.028		0.234		0.139	0.002	0.58	55.65			1.04	54.42
15	39	0.233		−0.035	0.011		0.252		0.068	0.002	1.47	43.31			1.56	42.03
16	40	0.250		0.000	0.000		0.273		0.027	0.003	1.98	28.04			2.04	27.00
17	41	0.183		0.007	−0.001		0.198		0.006	0.001	2.37	17.70			2.38	16.83
18	42	0.000		0.000	0.000		0.000		0.000	0.000	3.40	5.44			3.39	4.74
19	43	0.000		0.000	0.000		0.000		0.000	0.000	3.01	−3.49			3.00	−4.01
20	44	0.000		0.000	0.000		0.000		0.000	0.000	2.94	−14.66	−13.55	0.070	2.93	−15.04
21	45	0.000		0.000	0.000		0.000		0.000	0.000	3.11	−21.08	−19.41	0.100	3.10	−21.34
22	46	0.000	0.018	0.000	0.000	0.000	0.000	−0.024	0.000	0.000	3.22	−30.12	−29.47	0.020	3.21	−30.27
23	47	0.000		0.000	0.000		0.000		0.000	0.000	3.56	−34.64	−34.55	0.014	3.55	−34.71
24	48	0.000		0.000	0.000		0.000		0.000	0.000	3.10	−42.51	−42.82	0.007	3.09	−42.51
25	49	0.200		−0.040	0.010		0.216		0.067	0.002	1.40	−46.29	−45.33	0.003	1.45	−46.16
26	50	0.000	0.018	0.000	0.000	0.000	0.000	−0.024	0.000	0.000	1.76	−50.60	−50.26	0.001	1.75	−50.48
27	51	0.100		0.000	0.000		0.107		0.004	0.000	0.36	−52.76	−51.45	0.001	0.36	−52.60
28	52	0.000	0.017	0.000	0.000	0.000	0.000	−0.023	0.000	0.000	0.12	−56.35	−55.41	0.001	0.12	−56.16
29	53	0.000		0.000	0.000		0.000		0.000	0.000	0.07	−55.99	−55.28	0.001	0.06	−55.78
30	54	0.167		−0.027	0.007		0.180		0.045	0.000	0.74	−57.47	−56.93	0.001	0.79	−57.18
31	55	0.175		−0.013	0.003		0.189		0.029	0.001	1.57	−55.16	−55.10	0.001	1.61	−54.86
32	56	0.175		−0.007	0.002		0.189		0.022	0.001	1.98	−55.80	−55.29	0.010	2.03	−55.48
33	57	0.183		0.027	−0.004		0.199		−0.019	−0.001	2.67	−52.64			2.73	−52.31
34	58	0.183		0.033	−0.004		0.199		−0.026	−0.002	2.90	−52.48			2.97	−52.12
35	59	0.158		0.040	−0.005		0.172		−0.038	−0.002	3.34	−48.68			3.40	−48.32
36	60	0.167		0.027	−0.004		0.181		−0.021	−0.001	3.25	−47.91			3.32	−47.55
37	61	0.292		−0.007	−0.024		0.320		0.044	0.032	4.28	−42.70			4.52	−42.16
38	62	0.300		−0.007	−0.010		0.329		0.047	0.018	4.11	−41.18			4.34	−40.63
39	63	0.300		−0.007	−0.006		0.329		0.048	0.014	4.33	−36.03			4.54	−35.49
40	64	0.017		0.000	−0.001		0.018		0.000	0.001	2.93	−34.95			2.93	−34.62
41	65	0.050		−0.013	−0.011		0.053		0.017	0.012	3.51	−28.74			3.53	−28.38
42	66	0.050		−0.007	−0.001		0.053		0.009	0.001	2.73	−26.33			2.74	−25.97
43	67	0.100		−0.040	−0.014		0.108		0.053	0.020	2.29	−20.50			2.44	−19.98
44	68	0.150		−0.060	0.007		0.161		0.084	0.006	1.59	−17.34			1.88	−16.66
45	69	0.158		−0.053	0.031		0.169		0.077	−0.020	0.96	−11.09			1.28	−10.36
46	70	0.158		−0.040	0.044		0.169		0.062	−0.035	0.23	−7.36			0.64	−6.51
47	71	0.150		−0.007	0.014		0.161		0.019	−0.012	−0.18	−0.33			−0.09	0.22
48	72	0.117		0.020	−0.015		0.126		−0.019	0.012	−0.76	4.13			−0.68	4.71
49	73	0.075		0.013	−0.004		0.080		−0.013	0.003	−1.62	11.23			−1.59	11.78
50	74	0.050		0.000	0.001		0.053		0.001	−0.001	−2.41	16.02			−2.40	16.58
51	75	0.075		−0.033	−0.003		0.080		0.042	0.007	−2.13	24.73			−2.02	25.45
52	76	0.133		−0.067	0.023		0.142		0.091	−0.011	−1.74	31.21			−1.22	32.37
53	77	0.150		−0.060	0.037		0.160		0.085	−0.025	−1.39	40.44			−0.79	41.74
54	78	0.167		−0.047	0.047		0.178		0.072	−0.036	−1.09	47.29			−0.38	48.75
55	79	0.183		−0.033	0.058		0.196		0.059	−0.049	−0.85	56.85			0.06	58.56
56	80	0.233		−0.100	0.008		0.254		0.152	0.029	0.44	65.14			1.85	67.41
57	81	0.242		−0.093	0.013		0.263		0.145	0.022	0.41	74.81			1.66	76.99
58	82	0.250		−0.073	0.016		0.271		0.120	0.012	0.76	82.57			1.70	84.51
59	83	0.267		−0.087	0.035		0.289		0.144	0.001	0.46	92.36			1.76	94.72
60	84	0.275		−0.080	0.035		0.298		0.137	−0.001	0.83	100.53			2.09	102.93

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 24$ (Cr)																
61	85	0.275		−0.067	0.027		0.298		0.120	0.002	0.83	110.96			1.81	113.17
62	86	0.283		−0.047	0.017		0.308		0.096	0.005	1.15	119.45			1.87	121.48
$Z = 25$ (Mn)																
15	40	0.242		0.020	−0.003		0.264		0.001	0.000	1.22	56.06			1.24	54.53
16	41	0.250		0.047	−0.007		0.275		−0.031	−0.005	1.42	40.12			1.48	38.91
17	42	0.217		0.027	−0.004		0.237		−0.013	−0.001	2.32	28.84			2.34	27.82
18	43	0.167		0.007	−0.001		0.180		0.003	0.000	2.15	15.02			2.16	14.21
19	44	−0.008		0.000	0.000		−0.008		0.000	0.000	2.55	5.47			2.54	4.81
20	45	0.000		0.000	0.000		0.000		0.000	0.000	2.61	−5.92			2.60	−6.42
21	46	−0.008		0.000	0.000		−0.008		0.000	0.000	2.70	−13.80			2.69	−14.17
22	47	0.000		0.000	0.000		0.000		0.000	0.000	2.83	−23.16			2.82	−23.41
23	48	0.192		−0.053	0.013		0.207		0.082	0.002	2.15	−30.03	−29.20	0.026	2.18	−30.15
24	49	0.200		−0.040	0.010		0.216		0.067	0.002	1.33	−38.58	−37.61	0.024	1.37	−38.61
25	50	0.208		−0.020	0.005		0.225		0.044	0.002	1.17	−42.74	−42.62	0.001	1.19	−42.72
26	51	0.183		−0.013	0.003		0.197		0.030	0.001	0.37	−49.11	−48.24	0.001	0.40	−49.04
27	52	0.133		−0.007	0.001		0.143		0.016	0.001	0.02	−51.49	−50.70	0.002	0.03	−51.38
28	53	0.000		0.000	0.000		0.000		0.000	0.000	−0.27	−55.42	−54.69	0.002	−0.28	−55.29
29	54	0.125		−0.020	0.004		0.134		0.031	0.000	−0.21	−56.16	−55.55	0.002	−0.20	−55.99
30	55	0.183		−0.020	0.005		0.197		0.039	0.001	0.68	−57.70	−57.71	0.001	0.72	−57.47
31	56	0.192		0.000	0.000		0.208		0.016	0.001	1.50	−56.57	−56.91	0.001	1.53	−56.33
32	57	0.200		0.013	−0.002		0.217		0.001	0.000	1.96	−57.42	−57.49	0.003	2.01	−57.15
33	58	0.200		0.040	−0.005		0.218		−0.032	−0.003	2.56	−55.50	−55.83	0.030	2.62	−55.21
34	59	0.200		0.047	−0.006		0.219		−0.040	−0.004	2.80	−55.57	−55.47	0.029	2.88	−55.24
35	60	0.208		0.047	−0.006		0.228		−0.039	−0.004	3.16	−52.95	−53.17	0.100	3.24	−52.61
36	61	0.217		0.033	−0.024		0.237		−0.022	0.017	3.34	−52.15			3.44	−51.78
37	62	0.283		0.013	−0.038		0.311		0.015	0.037	3.96	−48.42			4.15	−47.95
38	63	0.283		0.013	−0.028		0.311		0.016	0.027	3.71	−47.19			3.91	−46.71
39	64	0.292		0.013	−0.023		0.321		0.019	0.023	4.02	−42.98			4.20	−42.52
40	65	0.258		0.000	−0.014		0.282		0.028	0.017	3.79	−40.95			3.94	−40.49
41	66	0.258		0.007	−0.009		0.282		0.019	0.010	3.86	−36.25			3.98	−35.82
42	67	0.050		−0.007	0.001		0.053		0.009	−0.001	2.63	−34.48			2.64	−34.15
43	68	0.183		−0.027	0.001		0.197		0.048	0.007	2.52	−29.29			2.64	−28.84
44	69	0.150		−0.033	0.004		0.161		0.050	0.003	1.75	−26.39			1.87	−25.91
45	70	0.150		−0.040	0.018		0.161		0.059	−0.010	1.27	−20.94			1.44	−20.40
46	71	0.158		−0.020	0.029		0.170		0.037	−0.024	0.47	−17.44			0.65	−16.86
47	72	0.150		0.000	0.010		0.161		0.010	−0.009	−0.12	−11.52			−0.06	−11.03
48	73	0.133		0.027	−0.010		0.144		−0.026	0.006	−0.87	−7.38			−0.78	−6.84
49	74	0.083		0.013	−0.003		0.089		−0.013	0.002	−1.81	−1.26			−1.78	−0.76
50	75	0.050		0.000	0.002		0.053		0.001	−0.002	−2.60	3.38			−2.60	3.90
51	76	0.083		−0.027	0.000		0.089		0.036	0.003	−2.16	11.38			−2.09	12.01
52	77	0.133		−0.047	0.007		0.143		0.065	0.002	−1.51	17.99			−1.26	18.83
53	78	0.150		−0.040	0.021		0.161		0.059	−0.013	−1.07	26.46			−0.81	27.36
54	79	0.167		−0.027	0.030		0.179		0.047	−0.024	−0.61	33.35			−0.30	34.35
55	80	0.183		−0.013	0.039		0.197		0.033	−0.035	−0.20	42.24			0.21	43.40
56	81	0.192		0.000	0.051		0.208		0.020	−0.049	0.09	49.42			0.80	50.92
57	82	0.225		−0.040	0.032		0.243		0.074	−0.018	0.94	59.16			1.42	60.51
58	83	0.250		−0.047	−0.003		0.272		0.086	0.022	1.47	67.00			2.05	68.50
59	84	0.258		−0.060	0.011		0.280		0.105	0.014	1.37	76.19			2.06	77.88
60	85	0.283		−0.060	0.027		0.307		0.113	0.000	1.33	83.85			2.15	85.74
61	86	0.275		−0.047	0.014		0.299		0.093	0.008	1.35	93.54			1.94	95.27
62	87	0.283		−0.027	0.002		0.309		0.069	0.013	1.51	101.79			1.97	103.46
63	88	0.300		−0.013	0.024		0.328		0.059	−0.013	1.46	111.75			1.92	113.51
64	89	0.308		0.000	0.055		0.339		0.050	−0.048	1.16	119.89			2.38	122.50
$Z = 26$ (Fe)																
16	42	0.242		0.100	−0.017		0.271		−0.097	−0.009	0.54	49.40			0.84	48.27
17	43	0.200		0.073	−0.009		0.221		−0.072	−0.007	1.65	37.99			1.77	36.93

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 26 (Fe)																
18	44	0.000		0.000	0.000		0.000		0.000	0.000	2.36	23.62			2.35	22.64
19	45	0.000		0.000	0.000		0.000		0.000	0.000	1.94	12.91			1.93	12.13
20	46	0.000		0.000	0.000		0.000		0.000	0.000	1.84	−0.02			1.83	−0.64
21	47	0.000		0.000	0.000		0.000		0.000	0.000	2.04	−8.12			2.03	−8.60
22	48	0.000		0.000	0.000		0.000		0.000	0.000	2.06	−18.93	−18.12	0.100	2.06	−19.29
23	49	0.000		0.000	0.000		0.000		0.000	0.000	2.43	−25.08	−24.58	0.160	2.42	−25.33
24	50	0.000	0.019	0.000	0.000	0.000	0.000	−0.025	0.000	0.000	1.95	−34.60	−34.47	0.060	1.94	−34.77
25	51	0.183		−0.007	0.002		0.198		0.023	0.001	0.64	−40.82	−40.22	0.015	0.66	−40.88
26	52	0.000	0.015	0.000	0.000	0.000	0.000	−0.020	0.000	0.000	0.53	−48.35	−48.33	0.010	0.52	−48.38
27	53	0.092		0.007	−0.001		0.098		−0.005	0.000	−0.73	−51.93	−50.94	0.002	−0.73	−51.90
28	54	0.000		0.000	0.000		0.000		0.000	0.000	−1.01	−57.08	−56.25	0.001	−1.02	−57.01
29	55	0.000		0.000	0.000		0.000		0.000	0.000	−0.97	−58.12	−57.47	0.001	−0.98	−58.02
30	56	0.000	0.021	0.000	0.000	0.000	0.000	−0.028	0.000	0.000	0.05	−60.72	−60.60	0.001	0.05	−60.59
31	57	0.175		0.013	−0.002		0.189		−0.003	0.000	0.72	−60.01	−60.18	0.001	0.75	−59.82
32	58	0.183		0.027	−0.004		0.199		−0.019	−0.001	1.22	−61.98	−62.15	0.001	1.27	−61.75
33	59	0.200		0.053	−0.007		0.219		−0.048	−0.004	1.94	−60.19	−60.66	0.001	2.01	−59.92
34	60	0.192		0.060	−0.008		0.211		−0.057	−0.004	2.07	−61.49	−61.41	0.004	2.17	−61.17
35	61	0.183		0.067	−0.032		0.200		−0.069	0.018	2.38	−59.16	−58.92	0.020	2.50	−58.82
36	62	0.183		0.053	−0.030		0.200		−0.052	0.019	2.59	−59.41	−58.89	0.015	2.71	−59.06
37	63	−0.125		0.027	0.006		−0.130		−0.025	−0.002	3.10	−56.02	−55.98	0.240	3.13	−55.75
38	64	−0.083		0.020	0.006		−0.087		−0.020	−0.004	2.70	−55.99			2.72	−55.72
39	65	−0.025		0.000	−0.001		−0.026		0.000	0.001	2.60	−52.41			2.60	−52.15
40	66	0.025		0.000	−0.001		0.027		0.000	0.001	2.24	−51.52			2.24	−51.25
41	67	0.050		−0.007	−0.010		0.053		0.009	0.010	2.81	−46.53			2.82	−46.24
42	68	0.042		0.000	0.000		0.045		0.001	0.000	1.97	−45.36			1.97	−45.06
43	69	0.050		−0.007	0.001		0.053		0.009	−0.001	1.99	−40.23			1.99	−39.92
44	70	0.075		−0.013	−0.001		0.080		0.018	0.002	1.26	−38.25			1.28	−37.91
45	71	0.133		−0.027	0.008		0.142		0.041	−0.003	0.67	−33.08			0.76	−32.66
46	72	0.133		−0.007	0.011		0.143		0.016	−0.009	−0.17	−30.56			−0.11	−30.14
47	73	0.142		0.020	0.000		0.153		−0.016	−0.003	−0.69	−24.74			−0.63	−24.29
48	74	0.125		0.040	−0.020		0.135		−0.043	0.014	−1.54	−21.61			−1.39	−21.04
49	75	0.067		0.020	−0.004		0.072		−0.022	0.002	−2.42	−15.59			−2.39	−15.12
50	76	0.042		0.000	0.001		0.045		0.001	−0.001	−3.36	−11.98			−3.36	−11.50
51	77	0.058		−0.020	−0.003		0.062		0.025	0.005	−2.77	−3.97			−2.73	−3.42
52	78	0.108		−0.040	−0.009		0.116		0.054	0.015	−2.04	1.85			−1.84	2.60
53	79	0.125		−0.020	−0.001		0.134		0.031	0.005	−1.71	10.08			−1.62	10.76
54	80	0.158		−0.007	0.016		0.170		0.020	−0.014	−0.82	16.55			−0.70	17.32
55	81	0.175		0.007	0.027		0.189		0.007	−0.027	−0.25	25.49			−0.01	26.41
56	82	0.192		0.020	0.040		0.210		−0.005	−0.043	0.18	31.98			0.69	33.22
57	83	0.208		0.033	0.027		0.228		−0.018	−0.033	0.58	41.16			0.98	42.35
58	84	0.250		−0.033	−0.012		0.272		0.068	0.027	1.49	48.57			1.98	49.92
59	85	0.258		−0.047	0.008		0.280		0.089	0.012	1.50	57.77			2.02	59.21
60	86	0.292		−0.047	0.035		0.317		0.100	−0.012	1.26	64.45			2.02	66.20
61	87	0.283		−0.033	0.017		0.308		0.078	0.000	1.28	74.04			1.76	75.57
62	88	0.283		−0.013	−0.002		0.309		0.051	0.011	1.55	81.63			1.91	83.12
63	89	0.308		0.000	0.031		0.338		0.046	−0.025	1.21	91.22			1.77	92.98
64	90	0.308		0.007	0.052		0.339		0.041	−0.048	0.98	98.68			2.12	101.11
65	91	0.300		0.020	0.024		0.331		0.019	−0.026	1.47	109.43			1.96	111.30
66	92	0.283		0.040	−0.077		0.312		−0.023	0.066	0.35	116.36			2.38	119.85
Z = 27 (Co)																
17	44	0.150		0.047	−0.006		0.163		−0.047	−0.002	1.41	50.51			1.46	49.24
18	45	−0.183		0.060	0.013		−0.190		−0.055	0.000	1.01	34.72			1.09	33.70
19	46	−0.067		0.020	0.003		−0.070		−0.021	−0.001	1.29	23.33			1.28	22.44
20	47	0.000		0.000	0.000		0.000		0.000	0.000	0.69	9.58			0.68	8.85
21	48	0.058		−0.007	0.001		0.062		0.010	0.000	1.00	0.26			0.99	−0.32
22	49	0.000		0.000	0.000		0.000		0.000	0.000	0.67	−11.21			0.67	−11.67
23	50	0.092		0.000	0.000		0.098		0.004	0.000	0.98	−18.71			0.97	−19.06

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 27 (Co)																
24	51	0.100		0.000	0.000		0.107		0.004	0.000	0.35	−28.68			0.35	−28.93
25	52	0.125		−0.007	0.001		0.134		0.015	0.000	0.12	−35.08	−34.35	0.030	0.12	−35.24
26	53	0.092		0.007	−0.001		0.098		−0.005	0.000	−0.86	−43.78	−42.64	0.018	−0.86	−43.88
27	54	0.092		0.013	−0.002		0.099		−0.012	0.001	−1.17	−48.21	−48.01	0.001	−1.18	−48.25
28	55	0.042		0.007	0.000		0.045		−0.008	0.000	−2.18	−54.92	−54.02	0.001	−2.18	−54.92
29	56	0.083		0.000	0.000		0.089		0.003	0.000	−1.54	−56.56	−56.04	0.003	−1.54	−56.51
30	57	0.092		0.007	−0.001		0.098		−0.005	0.000	−0.89	−59.80	−59.34	0.001	−0.89	−59.72
31	58	0.125		0.007	−0.001		0.134		−0.002	0.000	0.11	−59.90	−59.84	0.002	0.12	−59.78
32	59	0.133		0.013	−0.002		0.143		−0.008	0.000	0.77	−61.97	−62.22	0.001	0.79	−61.82
33	60	0.150		0.033	−0.004		0.163		−0.031	−0.001	1.39	−61.39	−61.65	0.001	1.42	−61.22
34	61	0.150		0.040	−0.017		0.163		−0.040	0.010	1.75	−62.70	−62.90	0.002	1.79	−62.49
35	62	0.142		0.047	−0.019		0.154		−0.049	0.012	2.35	−61.17	−61.43	0.020	2.39	−60.95
36	63	0.117		0.033	−0.013		0.126		−0.035	0.009	2.41	−61.80	−61.84	0.020	2.44	−61.58
37	64	0.083		0.020	−0.007		0.089		−0.021	0.005	2.89	−59.49	−59.79	0.020	2.90	−59.28
38	65	0.058		0.013	−0.004		0.062		−0.014	0.003	2.56	−59.61	−59.17	0.013	2.56	−59.40
39	66	0.050		0.007	−0.003		0.053		−0.007	0.003	2.59	−56.92	−56.76	0.410	2.59	−56.70
40	67	0.050		0.007	−0.003		0.053		−0.007	0.003	2.23	−56.24			2.23	−56.00
41	68	0.050		0.000	−0.009		0.053		0.001	0.009	2.45	−52.58			2.46	−52.33
42	69	0.050		0.000	−0.002		0.053		0.001	0.002	1.78	−51.44			1.78	−51.18
43	70	0.058		0.000	−0.001		0.062		0.001	0.001	1.70	−47.38			1.70	−47.10
44	71	0.067		0.000	−0.001		0.071		0.002	0.001	1.04	−45.50			1.05	−45.21
45	72	0.108		−0.013	0.001		0.115		0.021	0.001	0.52	−41.22			0.55	−40.88
46	73	0.092		0.007	0.001		0.098		−0.005	−0.002	−0.29	−38.83			−0.27	−38.49
47	74	0.117		0.013	0.002		0.126		−0.010	−0.004	−0.91	−34.02			−0.88	−33.64
48	75	0.092		0.027	−0.010		0.099		−0.029	0.007	−1.88	−31.17			−1.82	−30.74
49	76	0.067		0.020	−0.004		0.072		−0.022	0.002	−2.79	−26.07			−2.76	−25.64
50	77	0.050		0.007	0.000		0.053		−0.007	0.000	−3.60	−22.48			−3.59	−22.05
51	78	0.067		−0.007	−0.002		0.071		0.010	0.003	−3.03	−15.36			−3.02	−14.89
52	79	0.100		−0.033	−0.012		0.107		0.044	0.017	−2.30	−9.68			−2.15	−9.04
53	80	0.100		−0.013	0.001		0.107		0.020	0.001	−1.72	−2.05			−1.68	−1.47
54	81	0.117		−0.007	0.009		0.125		0.015	−0.008	−0.95	4.18			−0.90	4.80
55	82	0.150		−0.007	0.028		0.161		0.020	−0.026	−0.32	12.34			−0.12	13.16
56	83	0.158		0.000	0.038		0.171		0.013	−0.037	0.12	18.72			0.47	19.74
57	84	0.233		0.007	0.035		0.254		0.019	−0.034	0.91	27.49			1.30	28.61
58	85	0.250		−0.027	0.006		0.272		0.061	0.006	1.80	34.78			2.10	35.85
59	86	0.275		−0.033	0.021		0.299		0.076	−0.005	1.73	43.11			2.13	44.35
60	87	0.300		−0.027	0.034		0.327		0.077	−0.018	1.72	49.91			2.27	51.37
61	88	0.300		−0.013	0.018		0.328		0.058	−0.007	1.61	58.60			1.95	59.92
62	89	0.300		0.000	0.005		0.329		0.040	0.000	1.74	65.96			2.03	67.29
63	90	0.308		0.007	0.027		0.339		0.037	−0.024	1.57	74.96			2.01	76.52
64	91	0.317		0.020	0.053		0.351		0.028	−0.053	1.19	82.19			2.33	84.51
65	92	0.300		0.027	0.021		0.331		0.010	−0.026	1.70	92.22			2.13	93.93
66	93	0.300		0.047	−0.010		0.332		−0.019	−0.003	1.83	100.32			2.19	102.04
67	94	0.292		0.060	−0.047		0.323		−0.042	0.029	1.17	109.53			2.02	111.82
68	95	0.292		0.080	−0.034		0.325		−0.065	0.009	1.13	117.79			1.95	120.15
69	96	0.292		0.093	−0.031		0.327		−0.080	0.001	0.81	127.66			1.76	130.24
Z = 28 (Ni)																
18	46	0.000		0.000	0.000		0.000		0.000	0.000	1.01	44.73			1.00	43.50
19	47	−0.008		0.000	0.000		−0.008		0.000	0.000	0.45	32.20			0.44	31.18
20	48	0.000		0.000	0.000		0.000		0.000	0.000	0.33	17.59			0.32	16.75
21	49	−0.008		0.000	0.000		−0.008		0.000	0.000	0.51	7.83			0.50	7.14
22	50	0.000	0.011	0.000	0.000	0.000	0.000	−0.015	0.000	0.000	0.48	−4.66			0.47	−5.21
23	51	0.000		0.000	0.000		0.000		0.000	0.000	0.86	−12.38			0.85	−12.81
24	52	0.000	0.013	0.000	0.000	0.000	0.000	−0.017	0.000	0.000	0.29	−23.57	−22.91	0.060	0.28	−23.90
25	53	0.000		0.000	0.000		0.000		0.000	0.000	−0.09	−30.40	−29.38	0.160	−0.10	−30.65
26	54	0.000		0.000	0.000		0.000		0.000	0.000	−1.14	−40.40	−39.21	0.050	−1.15	−40.58
27	55	0.033		0.000	0.000		0.035		0.000	0.000	−2.17	−46.39	−45.33	0.011	−2.18	−46.51

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 28 (Ni)																
28	56	0.000	0.019	0.000	0.000	0.000	0.000	−0.025	0.000	0.000	−2.74	−54.40	−53.90	0.011	−2.74	−54.46
29	57	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.67	−56.88	−56.08	0.003	−2.68	−56.90
30	58	0.000	0.018	0.000	0.000	0.000	0.000	−0.024	0.000	0.000	−1.58	−60.84	−60.22	0.001	−1.59	−60.81
31	59	0.000	0.020	0.000	0.000	0.000	0.000	−0.027	0.000	0.000	−0.68	−61.30	−61.15	0.001	−0.68	−61.25
32	60	0.025		0.000	0.000		0.027		0.000	0.000	−0.16	−64.64	−64.47	0.001	−0.17	−64.57
33	61	−0.125		−0.020	−0.010		−0.130		0.030	0.007	0.59	−64.18	−64.22	0.001	0.61	−64.06
34	62	−0.092		−0.007	−0.005		−0.096		0.012	0.004	1.10	−66.44	−66.74	0.001	1.11	−66.31
35	63	−0.117		0.000	−0.007		−0.122		0.006	0.006	1.58	−65.26	−65.51	0.001	1.59	−65.11
36	64	−0.083		0.007	−0.001		−0.087		−0.005	0.002	1.63	−66.96	−67.10	0.002	1.64	−66.81
37	65	−0.075		0.013	0.001		−0.079		−0.013	0.000	1.76	−65.23	−65.12	0.002	1.77	−65.06
38	66	0.025		0.000	0.000		0.027		0.000	0.000	1.55	−66.27	−66.03	0.016	1.55	−66.10
39	67	−0.017		0.000	−0.001		−0.018		0.000	0.001	1.25	−64.12	−63.74	0.019	1.24	−63.94
40	68	0.017		0.000	0.000		0.018		0.000	0.000	1.02	−64.31	−63.48	0.016	1.02	−64.12
41	69	−0.050		−0.007	0.001		−0.052		0.009	−0.001	1.69	−60.41	−60.46	0.150	1.69	−60.20
42	70	0.025		0.000	−0.001		0.027		0.000	0.001	0.80	−60.47			0.80	−60.25
43	71	0.042		−0.007	0.002		0.045		0.009	−0.002	0.98	−56.32			0.99	−56.09
44	72	0.050		−0.007	0.000		0.053		0.009	0.000	0.54	−55.19			0.55	−54.94
45	73	0.050		−0.007	−0.001		0.053		0.009	0.001	0.00	−51.09			0.01	−50.83
46	74	0.050		0.000	0.001		0.053		0.001	−0.001	−0.69	−49.52			−0.68	−49.23
47	75	0.058		0.000	0.005		0.062		0.001	−0.005	−1.57	−45.13			−1.56	−44.83
48	76	0.050		0.000	0.001		0.053		0.001	−0.001	−2.47	−43.12			−2.46	−42.79
49	77	0.050		0.013	−0.002		0.053		−0.014	0.001	−3.33	−38.13			−3.32	−37.77
50	78	0.025		0.000	0.002		0.027		0.000	−0.002	−4.76	−36.04			−4.76	−35.66
51	79	0.050		−0.013	−0.001		0.053		0.017	0.002	−3.62	−28.49			−3.60	−28.07
52	80	0.050		−0.013	0.001		0.053		0.017	0.000	−3.33	−24.12			−3.32	−23.67
53	81	0.067		−0.020	−0.004		0.071		0.026	0.006	−2.35	−16.22			−2.31	−15.70
54	82	0.058		−0.013	0.002		0.062		0.017	−0.001	−1.91	−11.16			−1.89	−10.63
55	83	0.117		−0.027	0.022		0.125		0.039	−0.018	−0.67	−2.51			−0.51	−1.79
56	84	0.142		−0.013	0.041		0.152		0.027	−0.038	−0.06	3.21			0.29	4.17
57	85	−0.175		−0.073	−0.006		−0.178		0.096	−0.008	0.54	11.68			1.09	12.88
58	86	0.267		−0.027	0.032		0.290		0.068	−0.019	1.62	18.35			2.07	19.50
59	87	0.300		−0.013	0.035		0.328		0.060	−0.024	1.78	26.81			2.27	28.06
60	88	0.308		−0.020	0.044		0.337		0.072	−0.030	1.75	32.82			2.46	34.34
61	89	0.317		−0.007	0.031		0.348		0.057	−0.021	1.67	41.43			2.16	42.80
62	90	0.317		0.007	0.026		0.349		0.040	−0.022	1.70	47.92			2.16	49.33
63	91	0.325		0.013	0.034		0.359		0.036	−0.032	1.52	56.83			2.12	58.44
64	92	0.325		0.027	0.045		0.361		0.021	−0.048	1.42	63.58			2.39	65.64
65	93	0.317		0.040	0.029		0.352		0.001	−0.038	1.48	73.09			2.15	74.92
66	94	0.308		0.047	0.010		0.342		−0.014	−0.022	1.73	80.57			2.20	82.28
67	95	0.300		0.060	−0.005		0.334		−0.034	−0.012	1.51	90.14			1.97	91.92
68	96	0.300		0.073	−0.022		0.334		−0.052	−0.001	1.19	97.41			1.82	99.45
69	97	0.300		0.093	−0.022		0.336		−0.076	−0.008	0.76	107.10			1.64	109.47
70	98	0.308		0.113	−0.025		0.348		−0.098	−0.013	0.61	114.88			1.89	117.75
71	99	0.325		0.107	−0.014		0.368		−0.084	−0.022	0.05	124.74			1.21	127.58
Z = 29 (Cu)																
19	48	−0.083		0.013	0.002		−0.087		−0.012	−0.001	0.62	44.97			0.61	43.85
20	49	0.000		0.000	0.000		0.000		0.000	0.000	0.12	29.68			0.11	28.74
21	50	−0.050		−0.007	0.000		−0.052		0.009	0.000	0.79	19.13			0.78	18.35
22	51	0.000		0.000	0.000		0.000		0.000	0.000	0.34	5.94			0.34	5.30
23	52	0.108		−0.040	0.006		0.115		0.054	0.000	0.98	−2.78			0.99	−3.28
24	53	0.108		−0.033	0.005		0.115		0.045	0.000	0.38	−14.28			0.39	−14.68
25	54	0.133		−0.027	0.006		0.142		0.041	−0.001	0.37	−21.97			0.38	−22.28
26	55	0.100		−0.027	0.003		0.107		0.037	0.001	−0.63	−32.20			−0.62	−32.43
27	56	0.100		−0.013	0.001		0.107		0.020	0.001	−0.94	−38.65	−38.55	0.050	−0.94	−38.83
28	57	−0.033		0.000	0.000		−0.035		0.000	0.000	−2.31	−47.74	−47.31	0.016	−2.31	−47.86
29	58	0.100		−0.033	0.004		0.107		0.044	0.001	−1.21	−50.88	−51.66	0.003	−1.20	−50.94
30	59	0.117		−0.033	0.005		0.125		0.046	0.000	−0.65	−56.15	−56.35	0.002	−0.64	−56.16

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 29 (Cu)																
31	60	0.150		−0.013	0.003		0.161		0.026	0.000	0.35	−57.63	−58.34	0.003	0.36	−57.62
32	61	0.142		−0.013	0.024		0.152		0.026	−0.021	0.88	−61.22	−61.98	0.002	0.90	−61.16
33	62	0.158		0.013	0.009		0.171		−0.005	−0.011	1.53	−61.95	−62.80	0.004	1.55	−61.88
34	63	0.150		0.013	0.007		0.162		−0.006	−0.009	1.86	−64.63	−65.58	0.001	1.88	−64.53
35	64	0.142		0.020	0.000		0.153		−0.016	−0.003	2.42	−64.43	−65.42	0.001	2.43	−64.32
36	65	−0.150		0.013	−0.011		−0.156		−0.005	0.012	2.33	−66.51	−67.26	0.002	2.35	−66.38
37	66	−0.150		0.020	−0.003		−0.156		−0.014	0.006	2.69	−65.57	−66.25	0.002	2.71	−65.43
38	67	−0.117		0.020	0.002		−0.122		−0.018	0.001	2.36	−66.94	−67.30	0.008	2.37	−66.79
39	68	0.050		−0.013	0.003		0.053		0.017	−0.002	2.62	−65.24	−65.54	0.050	2.62	−65.09
40	69	0.050		−0.013	0.003		0.053		0.017	−0.002	2.30	−65.73	−65.74	0.008	2.30	−65.57
41	70	0.058		−0.027	−0.002		0.062		0.034	0.004	2.51	−63.26	−62.96	0.015	2.53	−63.08
42	71	0.058		−0.020	0.004		0.062		0.025	−0.002	1.91	−63.22			1.92	−63.03
43	72	0.075		−0.033	0.007		0.080		0.042	−0.004	1.74	−60.38			1.78	−60.15
44	73	0.083		−0.033	0.009		0.088		0.043	−0.005	0.99	−59.74			1.04	−59.49
45	74	0.117		−0.033	0.017		0.125		0.046	−0.012	0.53	−56.49			0.61	−56.20
46	75	0.108		−0.027	0.019		0.115		0.038	−0.015	−0.32	−55.25			−0.25	−54.94
47	76	0.117		−0.013	0.016		0.125		0.022	−0.014	−0.95	−51.52			−0.90	−51.22
48	77	0.083		−0.013	0.008		0.088		0.019	−0.007	−1.87	−49.68			−1.84	−49.38
49	78	0.075		−0.007	0.003		0.080		0.011	−0.002	−2.68	−45.52			−2.66	−45.22
50	79	0.050		−0.020	0.006		0.053		0.025	−0.005	−3.48	−42.95			−3.45	−42.61
51	80	0.075		−0.040	0.008		0.080		0.051	−0.004	−2.88	−36.82			−2.79	−36.37
52	81	0.100		−0.060	0.010		0.107		0.078	−0.001	−2.15	−32.14			−1.92	−31.54
53	82	0.117		−0.053	0.021		0.125		0.071	−0.013	−1.39	−25.29			−1.16	−24.66
54	83	0.133		−0.040	0.032		0.142		0.058	−0.025	−0.91	−20.33			−0.65	−19.62
55	84	0.150		−0.033	0.045		0.160		0.052	−0.038	−0.28	−13.11			0.12	−12.24
56	85	0.150		−0.027	0.055		0.161		0.046	−0.049	0.17	−7.67			0.73	−6.58
57	86	0.225		−0.020	0.056		0.244		0.052	−0.048	0.82	0.04			1.46	1.25
58	87	0.250		−0.033	0.043		0.271		0.072	−0.029	1.85	6.55			2.38	7.70
59	88	0.258		−0.040	0.038		0.279		0.082	−0.021	2.05	14.26			2.55	15.43
60	89	0.292		−0.033	0.048		0.318		0.084	−0.030	1.76	19.90			2.46	21.33
61	90	0.292		−0.020	0.035		0.319		0.066	−0.022	1.75	27.81			2.22	29.08
62	91	0.292		−0.007	0.027		0.319		0.049	−0.019	1.97	34.40			2.36	35.63
63	92	0.308		0.000	0.040		0.338		0.047	−0.034	1.73	42.49			2.32	43.99
64	93	0.308		0.007	0.052		0.339		0.041	−0.048	1.66	49.19			2.59	51.09
65	94	0.300		0.020	0.036		0.331		0.020	−0.037	1.97	58.21			2.57	59.85
66	95	0.292		0.040	0.012		0.323		−0.009	−0.022	2.28	65.67			2.66	67.17
67	96	0.283		0.047	0.002		0.313		−0.022	−0.014	2.19	74.64			2.52	76.18
68	97	0.283		0.067	−0.016		0.314		−0.048	−0.004	1.92	81.89			2.41	83.66
69	98	0.283		0.080	−0.015		0.316		−0.064	−0.009	1.58	90.96			2.21	92.96
70	99	0.292		0.107	−0.025		0.329		−0.095	−0.009	1.28	98.51			2.37	101.06
71	100	0.258		0.080	−0.005		0.288		−0.068	−0.017	1.37	108.34			2.05	110.57
72	101	0.250		0.067	−0.003		0.277		−0.054	−0.014	1.54	116.71			2.09	118.90
73	102	0.250		0.080	0.005		0.279		−0.068	−0.026	1.20	126.40			2.00	128.95
Z = 30 (Zn)																
21	51	−0.033		−0.013	0.000		−0.035		0.016	0.000	1.05	29.04			1.04	28.17
22	52	0.000		0.000	0.000		0.000		0.000	0.000	1.19	15.18			1.19	14.46
23	53	0.183		−0.053	0.012		0.197		0.081	0.002	1.83	6.18			1.90	5.66
24	54	0.183		−0.033	0.008		0.197		0.055	0.001	1.08	−6.70			1.13	−7.14
25	55	0.192		−0.020	0.005		0.207		0.041	0.001	1.12	−14.62			1.14	−14.98
26	56	0.167		−0.013	0.003		0.180		0.028	0.001	0.22	−25.95	−25.95	0.110	0.24	−26.23
27	57	0.125		−0.013	0.002		0.134		0.022	0.000	−0.30	−32.89	−32.70	0.120	−0.29	−33.12
28	58	0.000		0.007	0.000		0.000		−0.008	0.000	−1.01	−42.47	−42.29	0.050	−1.01	−42.65
29	59	0.133		−0.033	0.007		0.142		0.048	−0.001	−0.32	−46.80	−47.26	0.040	−0.31	−46.91
30	60	0.167		−0.020	0.005		0.180		0.037	0.000	0.35	−53.60	−54.18	0.011	0.38	−53.65
31	61	0.192		0.000	0.041		0.208		0.019	−0.039	1.16	−55.53	−56.34	0.016	1.20	−55.54
32	62	0.192		0.013	0.030		0.209		0.003	−0.031	1.57	−60.33	−61.17	0.010	1.62	−60.29
33	63	0.200		0.033	0.009		0.218		−0.022	−0.015	2.26	−61.27	−62.21	0.002	2.30	−61.22

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 30$ (Zn)																
34	64	0.200		0.040	0.000		0.219		−0.031	−0.008	2.53	−65.07	−66.00	0.002	2.59	−64.99
35	65	−0.258		0.000	−0.060		−0.264		0.031	0.052	2.88	−65.32	−65.91	0.002	2.99	−65.16
36	66	−0.208		0.013	−0.039		−0.215		0.005	0.038	2.89	−68.34	−68.90	0.002	2.98	−68.19
37	67	−0.175		0.020	−0.010		−0.182		−0.010	0.012	3.16	−67.72	−67.88	0.002	3.19	−67.60
38	68	−0.150		0.027	0.003		−0.156		−0.022	0.001	2.99	−69.95	−70.00	0.002	3.02	−69.82
39	69	−0.158		0.033	0.010		−0.164		−0.028	−0.004	3.33	−68.37	−68.42	0.002	3.37	−68.22
40	70	0.042		0.000	−0.001		0.045		0.001	0.001	2.94	−69.92	−69.56	0.003	2.94	−69.81
41	71	0.050		−0.007	−0.006		0.053		0.009	0.006	3.25	−67.56	−67.32	0.011	3.25	−67.43
42	72	0.050		−0.007	0.004		0.053		0.009	−0.004	2.59	−68.54	−68.13	0.006	2.59	−68.40
43	73	0.058		−0.013	0.002		0.062		0.017	−0.001	2.43	−65.88	−65.41	0.040	2.44	−65.73
44	74	0.117		−0.027	0.014		0.125		0.039	−0.010	1.30	−66.56	−65.71	0.019	1.35	−66.35
45	75	0.142		−0.033	0.027		0.152		0.050	−0.021	0.90	−63.43	−62.47	0.070	1.01	−63.15
46	76	0.133		−0.020	0.025		0.142		0.033	−0.021	0.02	−63.13	−62.28	0.170	0.11	−62.86
47	77	0.142		−0.007	0.020		0.152		0.018	−0.018	−0.48	−59.44	−58.60	0.130	−0.42	−59.17
48	78	0.083		0.000	0.002		0.089		0.003	−0.002	−1.41	−58.51			−1.39	−58.27
49	79	0.067		0.007	−0.002		0.071		−0.007	0.001	−1.99	−54.28	−54.17	0.270	−1.98	−54.03
50	80	0.042		0.000	0.002		0.045		0.001	−0.002	−2.83	−52.62	−52.16	0.320	−2.83	−52.36
51	81	0.075		−0.033	0.006		0.080		0.042	−0.003	−2.30	−46.70			−2.24	−46.35
52	82	0.133		−0.060	0.032		0.142		0.082	−0.021	−1.49	−42.79			−1.17	−42.16
53	83	0.150		−0.047	0.042		0.160		0.069	−0.033	−0.89	−36.26			−0.55	−35.57
54	84	0.158		−0.040	0.049		0.169		0.062	−0.040	−0.47	−32.18			−0.04	−31.37
55	85	0.175		−0.027	0.059		0.188		0.050	−0.052	−0.01	−25.27			0.55	−24.29
56	86	0.192		−0.013	0.071		0.208		0.038	−0.066	0.35	−20.72			1.18	−19.44
57	87	0.208		−0.033	0.059		0.224		0.064	−0.049	1.14	−13.00			1.80	−11.83
58	88	0.233		−0.040	0.046		0.251		0.077	−0.032	1.88	−7.58			2.43	−6.48
59	89	0.250		−0.047	0.037		0.270		0.089	−0.019	2.31	0.25			2.82	1.35
60	90	0.258		−0.053	0.046		0.279		0.099	−0.025	2.16	5.25			2.86	6.59
61	91	0.258		−0.040	0.036		0.279		0.082	−0.019	2.37	13.30			2.88	14.50
62	92	0.258		−0.027	0.027		0.280		0.065	−0.015	2.58	19.10			2.98	20.25
63	93	0.275		−0.013	0.041		0.300		0.054	−0.032	2.13	26.89			2.68	28.25
64	94	0.283		0.000	0.043		0.310		0.041	−0.038	2.09	32.87			2.74	34.40
65	95	0.283		0.013	0.035		0.311		0.024	−0.035	2.26	41.66			2.79	43.13
66	96	0.267		0.027	0.010		0.293		−0.001	−0.015	2.67	48.48			2.95	49.78
67	97	0.267		0.040	0.003		0.294		−0.017	−0.013	2.53	57.33			2.82	58.70
68	98	0.267		0.060	−0.015		0.295		−0.044	−0.002	2.24	63.84			2.67	65.43
69	99	0.283		0.093	−0.027		0.316		−0.081	−0.002	1.55	72.48			2.37	74.54
70	100	0.292		0.113	−0.032		0.329		−0.104	−0.004	1.29	79.38			2.49	81.91
71	101	0.250		0.073	−0.008		0.277		−0.062	−0.011	1.65	89.41			2.22	91.39
72	102	0.233		0.060	0.001		0.257		−0.049	−0.015	1.90	97.17			2.38	99.14
73	103	0.233		0.080	−0.009		0.259		−0.074	−0.011	1.56	106.79			2.26	109.09
74	104	0.200		0.047	0.005		0.219		−0.039	−0.015	1.48	114.54			1.84	116.60
75	105	0.175		0.033	0.014		0.191		−0.026	−0.020	1.02	124.36			1.32	126.45
$Z = 31$ (Ga)																
22	53	0.000		0.000	0.000		0.000		0.000	0.000	1.68	27.90			1.67	27.10
23	54	0.183		−0.033	0.008		0.197		0.055	0.001	2.27	17.64			2.30	17.01
24	55	0.192		−0.013	0.003		0.207		0.032	0.002	1.72	4.68			1.73	4.15
25	56	0.200		0.000	0.000		0.217		0.017	0.001	1.77	−4.40			1.77	−4.85
26	57	0.192		0.007	−0.001		0.208		0.007	0.001	1.14	−15.73			1.14	−16.09
27	58	0.158		0.000	0.000		0.170		0.011	0.001	0.61	−23.83			0.61	−24.12
28	59	0.000		0.007	0.000		0.000		−0.008	0.000	−0.20	−33.78			−0.20	−34.01
29	60	0.167		−0.007	0.002		0.180		0.021	0.000	0.69	−39.03	−39.82	0.050	0.69	−39.20
30	61	0.192		0.007	0.045		0.209		0.011	−0.045	1.21	−46.22			1.25	−46.31
31	62	0.200		0.020	0.026		0.218		−0.005	−0.029	1.94	−49.83	−52.00	0.028	1.96	−49.91
32	63	0.200		0.027	0.019		0.218		−0.014	−0.024	2.30	−55.42	−56.69	0.100	2.33	−55.45
33	64	0.200		0.047	−0.002		0.219		−0.040	−0.008	2.76	−57.65	−58.84	0.004	2.79	−57.66
34	65	0.200		0.047	−0.003		0.219		−0.040	−0.007	2.98	−61.74	−62.65	0.002	3.02	−61.71
35	66	−0.275		0.007	−0.068		−0.281		0.027	0.060	3.40	−62.96	−63.72	0.003	3.49	−62.86

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 31 (Ga)																
36	67	0.208		0.047	−0.010		0.228		−0.039	0.000	3.69	−65.92	−66.88	0.002	3.74	−65.85
37	68	−0.225		0.027	−0.025		−0.233		−0.009	0.028	3.89	−66.38	−67.08	0.002	3.94	−66.29
38	69	−0.208		0.027	−0.011		−0.215		−0.013	0.015	3.79	−68.75	−69.32	0.003	3.84	−68.65
39	70	−0.200		0.040	0.006		−0.207		−0.030	0.002	3.94	−68.35	−68.91	0.003	3.98	−68.25
40	71	−0.200		0.040	0.012		−0.207		−0.030	−0.003	3.71	−69.94	−70.14	0.002	3.77	−69.81
41	72	−0.208		0.047	0.013		−0.215		−0.036	−0.002	3.92	−68.64	−68.59	0.002	3.99	−68.49
42	73	0.067		−0.007	0.001		0.071		0.010	0.000	3.37	−69.71	−69.70	0.006	3.38	−69.61
43	74	0.092		−0.013	0.003		0.098		0.019	−0.001	2.86	−68.34	−68.05	0.070	2.87	−68.23
44	75	0.142		−0.013	0.014		0.152		0.025	−0.011	2.09	−68.85	−68.46	0.007	2.13	−68.69
45	76	0.150		−0.020	0.019		0.161		0.035	−0.015	1.71	−66.61	−66.44	0.150	1.76	−66.43
46	77	0.150		−0.007	0.019		0.161		0.019	−0.017	0.83	−66.48	−65.87	0.060	0.89	−66.29
47	78	0.150		0.007	0.012		0.162		0.002	−0.013	0.26	−63.76			0.30	−63.56
48	79	0.133		0.020	−0.004		0.143		−0.017	0.001	−0.64	−62.96	−62.72	0.120	−0.60	−62.75
49	80	0.083		0.013	−0.003		0.089		−0.013	0.002	−1.36	−59.74	−59.45	0.300	−1.35	−59.54
50	81	0.050		−0.007	0.003		0.053		0.009	−0.003	−1.86	−57.90	−57.98	0.190	−1.86	−57.69
51	82	0.083		−0.027	0.004		0.088		0.036	−0.001	−1.58	−53.08			−1.54	−52.80
52	83	0.142		−0.040	0.022		0.152		0.058	−0.014	−0.61	−49.16			−0.46	−48.75
53	84	0.150		−0.033	0.030		0.160		0.051	−0.023	−0.11	−43.55			0.06	−43.09
54	85	0.158		−0.027	0.037		0.169		0.046	−0.031	0.34	−39.58			0.57	−39.03
55	86	0.183		−0.007	0.045		0.198		0.026	−0.042	0.90	−33.38			1.22	−32.72
56	87	0.192		0.007	0.054		0.209		0.012	−0.054	1.28	−28.95			1.76	−28.08
57	88	0.208		0.013	0.044		0.227		0.007	−0.045	1.79	−22.29			2.17	−21.49
58	89	0.225		−0.013	0.038		0.244		0.041	−0.032	2.27	−17.26			2.60	−16.46
59	90	0.258		−0.067	0.028		0.279		0.115	−0.001	2.73	−10.18			3.26	−9.14
60	91	0.283		−0.067	0.037		0.307		0.123	−0.007	2.52	−5.34			3.19	−4.12
61	92	0.317		−0.047	0.022		0.346		0.106	0.005	2.59	1.79			3.09	2.89
62	93	0.317		−0.040	0.031		0.346		0.098	−0.008	2.58	7.27			3.12	8.47
63	94	0.317		−0.020	0.030		0.347		0.073	−0.015	2.58	14.77			3.01	15.90
64	95	0.292		−0.007	0.032		0.319		0.050	−0.024	2.83	20.93			3.26	22.13
65	96	0.275		0.020	0.014		0.302		0.010	−0.017	3.16	29.16			3.41	30.24
66	97	0.267		0.040	−0.007		0.294		−0.019	−0.003	3.21	35.53			3.45	36.68
67	98	0.267		0.053	−0.012		0.295		−0.035	−0.002	3.00	43.59			3.30	44.87
68	99	0.258		0.067	−0.021		0.285		−0.055	0.003	2.74	50.06			3.20	51.55
69	100	0.267		0.087	−0.023		0.298		−0.077	−0.002	2.21	58.15			2.88	59.94
70	101	0.275		0.107	−0.028		0.309		−0.100	−0.004	1.88	64.90			2.88	67.10
71	102	0.250		0.087	−0.016		0.278		−0.080	−0.007	1.88	73.89			2.58	75.86
72	103	0.233		0.073	−0.010		0.258		−0.066	−0.008	2.07	81.50			2.62	83.41
73	104	0.225		0.080	−0.021		0.249		−0.077	0.001	1.83	90.57			2.49	92.68
74	105	0.217		0.087	−0.021		0.241		−0.087	0.000	1.67	98.18			2.48	100.52
75	106	0.183		0.053	0.001		0.201		−0.049	−0.011	1.16	107.28			1.51	109.27
76	107	−0.167		0.080	0.048		−0.171		−0.080	−0.028	0.05	114.25			1.12	117.06
77	108	−0.158		0.080	0.046		−0.161		−0.081	−0.027	−0.76	123.36			0.32	126.26
Z = 32 (Ge)																
23	55	0.192		−0.020	0.005		0.207		0.041	0.001	2.47	27.47			2.49	26.77
24	56	0.200		0.000	0.000		0.217		0.017	0.001	1.94	13.35			1.96	12.77
25	57	0.208		0.013	−0.002		0.226		0.003	0.000	2.01	4.02			2.01	3.53
26	58	0.200		0.027	−0.004		0.218		−0.016	−0.001	1.47	−8.37			1.49	−8.76
27	59	0.167		0.020	−0.003		0.181		−0.013	0.000	1.08	−16.59			1.08	−16.93
28	60	−0.100		−0.013	−0.002		−0.104		0.019	0.000	0.57	−27.38	−27.77	0.230	0.57	−27.65
29	61	0.167		0.000	0.026		0.180		0.014	−0.025	1.12	−33.22			1.14	−33.42
30	62	0.200		0.020	0.030		0.218		−0.004	−0.033	1.80	−41.36			1.84	−41.49
31	63	0.200		0.033	0.015		0.219		−0.021	−0.021	2.37	−45.86			2.39	−45.97
32	64	0.200		0.047	0.001		0.219		−0.039	−0.011	2.68	−53.04	−54.43	0.250	2.72	−53.09
33	65	0.208		0.060	−0.014		0.229		−0.055	0.001	3.07	−55.58	−56.41	0.100	3.11	−55.61
34	66	0.208		0.067	−0.022		0.229		−0.065	0.007	3.23	−60.78	−61.62	0.030	3.29	−60.76
35	67	−0.292		0.020	−0.082		−0.299		0.018	0.076	3.74	−62.12	−62.65	0.005	3.88	−62.02
36	68	−0.267		0.027	−0.064		−0.275		0.003	0.062	3.67	−66.48	−66.98	0.006	3.80	−66.36

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 32 (Ge)																
37	69	−0.242		0.033	−0.031		−0.250		−0.012	0.035	4.19	−66.83	−67.10	0.004	4.26	−66.76
38	70	−0.233		0.033	−0.023		−0.241		−0.014	0.027	4.13	−70.17	−70.56	0.002	4.21	−70.07
39	71	−0.208		0.047	0.004		−0.215		−0.036	0.006	4.30	−69.95	−69.91	0.002	4.35	−69.87
40	72	−0.217		0.047	0.006		−0.224		−0.034	0.005	4.08	−72.51	−72.58	0.001	4.15	−72.40
41	73	−0.217		0.053	0.013		−0.224		−0.041	0.000	4.19	−71.50	−71.30	0.001	4.26	−71.38
42	74	−0.217		0.053	0.012		−0.224		−0.041	0.001	3.82	−73.34	−73.42	0.001	3.91	−73.19
43	75	0.083		−0.007	0.000		0.089		0.011	0.001	3.75	−71.72	−71.86	0.001	3.76	−71.64
44	76	0.133		0.000	0.004		0.143		0.008	−0.004	2.53	−73.60	−73.21	0.002	2.56	−73.50
45	77	0.142		−0.007	0.009		0.153		0.017	−0.007	2.15	−71.53	−71.21	0.002	2.19	−71.42
46	78	0.142		0.007	0.007		0.153		0.000	−0.008	1.23	−72.36	−71.86	0.004	1.27	−72.22
47	79	0.150		0.020	0.003		0.162		−0.014	−0.006	0.67	−69.79	−69.49	0.090	0.71	−69.64
48	80	0.133		0.033	−0.012		0.144		−0.033	0.007	−0.18	−69.82	−69.45	0.023	−0.12	−69.64
49	81	0.083		0.013	−0.002		0.089		−0.013	0.001	−0.61	−66.48	−66.30	0.120	−0.60	−66.32
50	82	0.050		0.000	0.002		0.053		0.001	−0.002	−1.11	−65.49	−65.54	0.150	−1.10	−65.33
51	83	0.083		−0.020	0.004		0.088		0.027	−0.002	−0.78	−60.78			−0.75	−60.57
52	84	0.133		−0.027	0.009		0.142		0.041	−0.004	−0.17	−58.06			−0.10	−57.79
53	85	0.150		−0.020	0.019		0.161		0.035	−0.015	0.45	−52.47			0.55	−52.15
54	86	0.158		−0.007	0.024		0.170		0.021	−0.022	0.90	−49.33			1.02	−48.96
55	87	0.183		0.007	0.035		0.198		0.009	−0.035	1.40	−43.32			1.62	−42.82
56	88	0.200		0.027	0.043		0.219		−0.011	−0.047	1.83	−39.65			2.21	−38.95
57	89	0.208		0.033	0.030		0.228		−0.018	−0.036	2.25	−33.20			2.53	−32.58
58	90	0.225		0.013	0.025		0.245		0.009	−0.026	2.61	−29.07			2.84	−28.46
59	91	0.283	0.029	−0.080	0.028	0.023	0.308	−0.039	0.139	0.008	3.00	−22.19			3.69	−21.07
60	92	0.300		−0.073	0.028		0.326		0.135	0.008	3.09	−17.83			3.79	−16.65
61	93	0.308		−0.053	0.020		0.336		0.111	0.008	2.93	−11.03			3.45	−9.99
62	94	0.308		−0.040	0.021		0.336		0.094	0.001	3.00	−6.22			3.48	−5.18
63	95	0.317		−0.013	0.018		0.348		0.063	−0.006	3.12	1.29			3.46	2.24
64	96	0.308		0.000	0.027		0.338		0.046	−0.021	3.26	6.61			3.66	7.68
65	97	0.292		0.033	0.004		0.322		−0.002	−0.011	3.37	14.51			3.62	15.48
66	98	0.275		0.053	−0.022		0.304		−0.034	0.007	3.26	20.00			3.62	21.15
67	99	0.275		0.067	−0.031		0.305		−0.053	0.011	2.93	27.85			3.42	29.20
68	100	0.267		0.080	−0.034		0.296		−0.070	0.011	2.58	33.52			3.24	35.09
69	101	0.275		0.100	−0.037		0.307		−0.093	0.006	2.04	41.52			2.93	43.40
70	102	0.275		0.113	−0.036		0.309		−0.108	0.001	1.85	47.71			2.96	49.89
71	103	0.250		0.093	−0.025		0.279		−0.088	0.000	1.84	56.60			2.62	58.53
72	104	0.233		0.080	−0.020		0.258		−0.075	0.000	2.02	63.54			2.66	65.40
73	105	0.233		0.100	−0.036		0.259		−0.101	0.010	1.66	72.41			2.71	74.76
74	106	0.217		0.107	−0.037		0.241		−0.113	0.011	1.54	79.39			2.80	82.03
75	107	0.192		0.080	−0.024		0.212		−0.083	0.007	1.13	88.52			1.86	90.73
76	108	0.167		0.067	−0.017		0.183		−0.070	0.005	0.95	95.77			1.49	97.88
77	109	−0.158		0.080	0.046		−0.161		−0.081	−0.027	−0.37	104.30			0.66	107.00
78	110	−0.158		0.067	0.039		−0.162		−0.067	−0.023	−0.59	111.82			0.19	114.37
79	111	−0.150		0.060	0.034		−0.155		−0.060	−0.021	−1.43	121.12			−0.79	123.63
80	112	−0.142		0.047	0.024		−0.147		−0.046	−0.015	−1.67	128.93			−1.26	131.31
Z = 33 (As)																
24	57	0.200		0.040	−0.005		0.218		−0.032	−0.003	2.37	25.99			2.39	25.36
25	58	0.208		0.047	−0.006		0.228		−0.039	−0.004	2.40	15.47			2.41	14.94
26	59	0.208		0.067	−0.009		0.229		−0.063	−0.006	1.90	2.86			1.95	2.45
27	60	0.192		0.053	−0.007		0.210		−0.049	−0.004	1.74	−6.25			1.75	−6.61
28	61	−0.217		−0.027	−0.039		−0.221		0.052	0.029	1.24	−17.27			1.28	−17.54
29	62	0.192		0.033	0.008		0.209		−0.023	−0.014	1.95	−24.05			1.95	−24.30
30	63	0.200		0.047	0.004		0.219		−0.039	−0.014	2.34	−32.72			2.37	−32.90
31	64	0.208		0.053	−0.002		0.228		−0.046	−0.010	2.85	−38.35			2.86	−38.50
32	65	0.208		0.067	−0.016		0.229		−0.064	0.001	3.05	−45.88			3.08	−45.97
33	66	0.217		0.080	−0.027		0.240		−0.079	0.008	3.39	−49.97	−52.07	0.060	3.42	−50.04
34	67	0.217		0.087	−0.035		0.240		−0.089	0.014	3.45	−55.96	−56.65	0.100	3.52	−55.97
35	68	−0.300		0.027	−0.081		−0.307		0.013	0.076	3.83	−58.46	−58.88	0.100	3.91	−58.44

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 33 (As)																
36	69	−0.283		0.027	−0.071		−0.291		0.007	0.068	3.76	−63.03	−63.08	0.030	3.87	−62.96
37	70	−0.267		0.033	−0.045		−0.275		−0.005	0.047	4.32	−64.33	−64.34	0.050	4.38	−64.30
38	71	−0.258		0.040	−0.035		−0.266		−0.016	0.040	4.35	−67.78	−67.89	0.004	4.43	−67.72
39	72	−0.242		0.040	−0.019		−0.250		−0.020	0.026	4.48	−68.58	−68.23	0.004	4.53	−68.54
40	73	−0.242		0.047	−0.008		−0.250		−0.029	0.018	4.37	−71.23	−70.96	0.004	4.44	−71.16
41	74	−0.233		0.053	0.003		−0.241		−0.038	0.009	4.41	−71.24	−70.86	0.002	4.46	−71.18
42	75	−0.242		0.053	0.002		−0.250		−0.036	0.011	4.08	−73.23	−73.03	0.002	4.16	−73.13
43	76	−0.250		0.067	0.013		−0.258		−0.051	0.005	4.03	−72.51	−72.29	0.002	4.12	−72.39
44	77	0.150		0.020	−0.004		0.162		−0.015	0.001	3.02	−74.36	−73.92	0.002	3.05	−74.30
45	78	0.150		0.007	−0.001		0.162		0.001	0.000	2.62	−73.23	−72.82	0.010	2.64	−73.17
46	79	0.150		0.020	−0.001		0.162		−0.015	−0.002	1.65	−74.26	−73.64	0.006	1.69	−74.18
47	80	0.150		0.033	−0.005		0.163		−0.031	0.000	1.04	−72.63	−72.12	0.021	1.08	−72.52
48	81	0.150		0.047	−0.018		0.163		−0.048	0.010	0.32	−72.70	−72.53	0.006	0.41	−72.53
49	82	0.108		0.027	−0.007		0.116		−0.028	0.004	−0.42	−70.52	−70.24	0.070	−0.39	−70.40
50	83	0.050		0.000	0.001		0.053		0.001	−0.001	−0.80	−69.58	−69.88	0.220	−0.80	−69.47
51	84	0.092		−0.007	0.002		0.098		0.012	−0.001	−0.44	−65.67			−0.43	−65.54
52	85	0.133		−0.007	0.001		0.143		0.016	0.001	0.22	−63.05			0.25	−62.88
53	86	0.150		0.000	0.009		0.161		0.010	−0.008	0.93	−58.20			0.97	−57.99
54	87	0.167		0.020	0.012		0.181		−0.011	−0.015	1.45	−55.12			1.53	−54.86
55	88	0.192		0.033	0.019		0.210		−0.022	−0.025	1.98	−49.89			2.13	−49.53
56	89	0.200		0.040	0.028		0.220		−0.028	−0.036	2.38	−46.38			2.62	−45.89
57	90	0.200		0.053	0.015		0.220		−0.045	−0.026	2.76	−40.77			2.98	−40.27
58	91	0.208		0.053	0.005		0.229		−0.045	−0.016	3.05	−36.82			3.26	−36.31
59	92	0.292		−0.060	0.013		0.318		0.115	0.016	3.38	−30.76			3.83	−29.97
60	93	0.308		−0.053	0.018		0.336		0.111	0.010	3.53	−26.46			4.00	−25.61
61	94	0.317		−0.040	0.011		0.347		0.096	0.013	3.46	−20.33			3.85	−19.52
62	95	0.308		−0.033	0.009		0.337		0.084	0.011	3.47	−15.69			3.84	−14.85
63	96	0.317		−0.013	0.010		0.348		0.062	0.002	3.57	−8.95			3.85	−8.16
64	97	0.308		0.007	0.007		0.339		0.034	−0.004	3.72	−3.72			3.95	−2.92
65	98	0.275		0.047	−0.026		0.303		−0.028	0.013	3.59	3.21			3.88	4.13
66	99	0.267		0.067	−0.038		0.295		−0.055	0.019	3.38	8.52			3.89	9.71
67	100	0.267		0.080	−0.051		0.296		−0.073	0.027	2.94	15.55			3.70	17.04
68	101	0.258		0.093	−0.038		0.287		−0.089	0.011	2.83	21.35			3.59	22.91
69	102	0.267		0.107	−0.039		0.299		−0.103	0.007	2.32	28.69			3.24	30.48
70	103	0.267		0.120	−0.037		0.300		−0.119	0.001	1.97	34.64			3.11	36.72
71	104	0.250		0.107	−0.032		0.280		−0.106	0.002	1.92	42.81			2.86	44.76
72	105	0.233		0.093	−0.027		0.259		−0.092	0.003	1.99	49.55			2.77	51.42
73	106	0.225		0.107	−0.038		0.251		−0.111	0.011	1.73	57.86			2.83	60.12
74	107	0.217		0.113	−0.043		0.242		−0.121	0.015	1.58	64.73			2.91	67.30
75	108	0.200		0.100	−0.040		0.221		−0.107	0.018	1.04	73.08			2.16	75.53
76	109	0.167		0.080	−0.026		0.183		−0.086	0.011	0.94	80.34			1.67	82.49
77	110	0.150		0.073	−0.024		0.164		−0.080	0.012	−0.01	88.59			0.62	90.73
78	111	−0.167		0.053	0.028		−0.173		−0.050	−0.016	−0.15	96.14			0.30	98.18
79	112	−0.158		0.047	0.025		−0.164		−0.044	−0.015	−1.02	104.78			−0.64	106.85
80	113	−0.150		0.040	0.017		−0.156		−0.037	−0.009	−1.44	112.34			−1.17	114.40
81	114	0.067		0.020	−0.009		0.072		−0.022	0.007	−4.51	119.06			−4.43	121.04
82	115	0.000		0.000	−0.001		0.000		0.000	0.001	−5.22	126.63			−5.23	128.62
Z = 34 (Se)																
25	59	0.217		0.060	−0.008		0.239		−0.053	−0.006	2.34	25.08			2.38	24.54
26	60	0.208		0.080	−0.011		0.230		−0.079	−0.007	1.88	11.39			1.97	10.99
27	61	0.183		0.060	−0.025		0.200		−0.060	0.013	1.71	2.03			1.76	1.66
28	62	−0.242		−0.033	−0.044		−0.246		0.064	0.030	1.55	−9.77			1.63	−10.03
29	63	0.192		0.040	0.000		0.210		−0.033	−0.008	2.10	−16.93			2.12	−17.21
30	64	0.200		0.053	−0.003		0.219		−0.047	−0.008	2.53	−26.65			2.57	−26.85
31	65	0.208		0.060	−0.010		0.229		−0.055	−0.003	2.99	−32.56			3.02	−32.73
32	66	0.217		0.080	−0.027		0.240		−0.079	0.008	3.15	−41.17			3.22	−41.27
33	67	0.217		0.093	−0.037		0.240		−0.096	0.014	3.41	−46.05			3.47	−46.11

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 34$ (Se)																
34	68	0.217		0.100	−0.044		0.240		−0.105	0.019	3.41	−53.55			3.52	−53.56
35	69	−0.308		0.027	−0.094		−0.315		0.016	0.087	3.74	−56.33	−56.30	0.030	3.87	−56.28
36	70	−0.300		0.027	−0.086		−0.307		0.013	0.081	3.70	−61.87			3.86	−61.78
37	71	−0.283		0.033	−0.054		−0.291		−0.001	0.055	4.25	−63.39			4.34	−63.37
38	72	−0.275		0.040	−0.044		−0.283		−0.011	0.048	4.33	−67.77	−67.90	0.012	4.44	−67.71
39	73	0.358		0.060	−0.045		0.400		−0.024	0.024	4.67	−68.56	−68.22	0.011	4.80	−68.47
40	74	−0.242		0.047	−0.007		−0.250		−0.029	0.017	4.42	−72.32	−72.21	0.001	4.49	−72.27
41	75	−0.233		0.053	0.005		−0.241		−0.038	0.008	4.48	−72.50	−72.17	0.001	4.54	−72.46
42	76	−0.233		0.053	0.005		−0.241		−0.038	0.008	4.08	−75.49	−75.25	0.001	4.16	−75.42
43	77	−0.250		0.067	0.015		−0.258		−0.051	0.003	4.06	−74.93	−74.60	0.001	4.15	−74.84
44	78	0.133		0.020	−0.006		0.143		−0.017	0.003	3.27	−77.46	−77.03	0.002	3.30	−77.44
45	79	0.142		0.013	−0.005		0.153		−0.008	0.003	2.87	−76.51	−75.92	0.002	2.90	−76.48
46	80	0.142		0.027	−0.006		0.153		−0.024	0.002	1.89	−78.45	−77.76	0.002	1.93	−78.40
47	81	0.150		0.033	−0.008		0.163		−0.031	0.003	1.25	−77.01	−76.39	0.002	1.30	−76.94
48	82	0.142		0.047	−0.020		0.154		−0.049	0.013	0.38	−78.11	−77.60	0.002	0.47	−77.99
49	83	0.083		0.020	−0.005		0.089		−0.021	0.003	0.00	−75.72	−75.34	0.004	0.02	−75.66
50	84	0.050		0.007	0.000		0.053		−0.007	0.000	−0.42	−75.68	−75.95	0.015	−0.42	−75.62
51	85	0.075		−0.007	0.000		0.080		0.011	0.001	0.08	−71.78	−72.42	0.090	0.09	−71.70
52	86	0.117		0.000	−0.001		0.125		0.006	0.001	0.55	−70.18	−70.55	0.120	0.58	−70.07
53	87	0.150		0.007	0.004		0.162		0.001	−0.005	1.33	−65.41	−66.61	0.150	1.37	−65.26
54	88	0.167		0.020	0.007		0.181		−0.012	−0.010	1.83	−63.17			1.90	−62.97
55	89	0.192		0.040	0.013		0.210		−0.031	−0.021	2.29	−58.14			2.43	−57.86
56	90	0.200		0.053	0.019		0.220		−0.045	−0.030	2.67	−55.44			2.91	−55.03
57	91	0.200		0.067	0.004		0.221		−0.063	−0.018	3.10	−49.91			3.35	−49.46
58	92	0.208		0.067	−0.004		0.229		−0.062	−0.011	3.32	−46.82			3.58	−46.34
59	93	0.292		−0.040	0.007		0.319		0.088	0.014	3.60	−40.94			3.93	−40.35
60	94	0.308		−0.040	0.014		0.336		0.094	0.009	3.65	−37.50			4.05	−36.80
61	95	0.317		−0.027	0.007		0.347		0.079	0.011	3.56	−31.51			3.89	−30.84
62	96	0.317		−0.013	0.005		0.348		0.061	0.007	3.62	−27.56			3.93	−26.87
63	97	0.317		0.000	0.003		0.349		0.045	0.003	3.70	−20.95			3.95	−20.27
64	98	0.317		0.013	0.002		0.349		0.029	−0.001	3.86	−16.44			4.12	−15.71
65	99	0.300		0.040	−0.015		0.332		−0.011	0.005	3.66	−9.67			3.92	−8.89
66	100	0.267		0.080	−0.051		0.296		−0.073	0.027	3.18	−5.36			3.90	−4.07
67	101	0.267		0.087	−0.059		0.296		−0.083	0.033	2.74	1.57			3.65	3.11
68	102	0.258		0.100	−0.047		0.287		−0.098	0.018	2.65	6.70			3.55	8.28
69	103	0.267		0.113	−0.047		0.299		−0.112	0.013	2.09	13.90			3.13	15.68
70	104	0.267		0.127	−0.045		0.301		−0.128	0.007	1.85	19.27			3.13	21.36
71	105	0.250		0.113	−0.039		0.280		−0.114	0.007	1.75	27.30			2.80	29.23
72	106	0.233		0.107	−0.035		0.260		−0.110	0.007	1.88	33.43			2.89	35.38
73	107	0.225		0.113	−0.045		0.251		−0.120	0.016	1.59	41.62			2.82	43.87
74	108	0.217		0.120	−0.051		0.242		−0.130	0.022	1.40	47.78			2.91	50.40
75	109	0.200		0.107	−0.047		0.222		−0.117	0.023	1.02	56.23			2.32	58.71
76	110	0.175		0.093	−0.037		0.193		−0.102	0.019	0.99	62.90			2.00	65.17
77	111	0.150		0.080	−0.031		0.164		−0.089	0.018	0.24	71.29			1.02	73.42
78	112	0.142		0.073	−0.030		0.155		−0.081	0.018	−0.40	77.70			0.32	79.84
79	113	−0.142		0.060	0.031		−0.146		−0.061	−0.019	−1.04	86.49			−0.51	88.55
80	114	−0.142		0.047	0.022		−0.147		−0.046	−0.013	−1.40	93.49			−1.05	95.45
81	115	0.008		0.007	−0.005		0.008		−0.008	0.005	−4.31	100.31			−4.30	102.04
82	116	0.000		0.000	−0.001		0.000		0.000	0.001	−4.84	107.45			−4.84	109.26
83	117	−0.017		−0.007	0.001		−0.018		0.008	−0.001	−4.73	117.57			−4.72	119.49
84	118	0.000		0.000	−0.001		0.000		0.000	0.001	−3.82	126.43			−3.82	128.45
$Z = 35$ (Br)																
26	61	0.250		0.073	−0.068		0.276		−0.070	0.047	2.23	23.96			2.42	23.63
27	62	0.275		0.073	−0.041		0.305		−0.061	0.019	2.75	14.19			2.79	13.79
28	63	−0.275		−0.040	−0.079		−0.276		0.082	0.058	1.99	1.58			2.17	1.38
29	64	−0.275		−0.013	−0.074		−0.279		0.051	0.060	2.61	−6.60			2.70	−6.82
30	65	−0.283		−0.007	−0.094		−0.287		0.048	0.080	2.87	−16.71			3.04	−16.81

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 35 (Br)																
31	66	−0.292		0.007	−0.086		−0.297		0.033	0.075	3.42	−23.58			3.51	−23.71
32	67	−0.300		0.013	−0.100		−0.306		0.030	0.089	3.53	−32.48			3.68	−32.51
33	68	−0.308		0.027	−0.089		−0.315		0.016	0.083	3.72	−38.43			3.80	−38.50
34	69	−0.308		0.027	−0.098		−0.315		0.017	0.091	3.53	−46.35			3.67	−46.35
35	70	−0.333		0.033	−0.094		−0.340		0.016	0.088	3.84	−50.58			3.93	−50.60
36	71	−0.333		0.033	−0.090		−0.340		0.016	0.084	3.77	−56.79			3.90	−56.75
37	72	−0.325		0.040	−0.076		−0.333		0.004	0.075	4.16	−59.45			4.25	−59.45
38	73	−0.317		0.040	−0.061		−0.325		0.000	0.062	4.47	−63.81	−63.56	0.130	4.58	−63.78
39	74	0.367		0.053	−0.042		0.410		−0.012	0.025	4.45	−65.91	−65.30	0.015	4.53	−65.90
40	75	−0.283		0.047	−0.023		−0.291		−0.019	0.031	4.65	−69.40	−69.14	0.014	4.73	−69.38
41	76	−0.258		0.053	−0.001		−0.266		−0.033	0.014	4.61	−70.62	−70.29	0.009	4.65	−70.62
42	77	−0.267		0.053	−0.003		−0.275		−0.031	0.015	4.28	−73.73	−73.24	0.003	4.35	−73.70
43	78	−0.267		0.060	0.007		−0.275		−0.039	0.009	4.21	−74.12	−73.45	0.004	4.28	−74.10
44	79	0.083		0.007	−0.002		0.089		−0.006	0.001	4.07	−76.20	−76.07	0.002	4.07	−76.23
45	80	0.100		0.007	−0.003		0.107		−0.004	0.002	3.32	−76.48	−75.89	0.002	3.33	−76.50
46	81	0.108		0.020	−0.006		0.116		−0.019	0.004	2.28	−78.66	−77.97	0.005	2.30	−78.67
47	82	0.133		0.033	−0.007		0.144		−0.033	0.002	1.57	−78.15	−77.50	0.005	1.60	−78.14
48	83	0.092		0.027	−0.007		0.099		−0.029	0.004	0.67	−79.44	−79.01	0.004	0.69	−79.43
49	84	0.075		0.020	−0.005		0.080		−0.022	0.003	0.34	−77.86	−77.78	0.025	0.35	−77.85
50	85	0.050		0.007	0.000		0.053		−0.007	0.000	−0.33	−78.22	−78.61	0.019	−0.33	−78.21
51	86	0.067		0.000	0.000		0.071		0.002	0.000	0.23	−75.10	−75.64	0.060	0.23	−75.07
52	87	0.092		0.007	0.000		0.098		−0.005	−0.001	0.84	−73.51	−73.86	0.025	0.85	−73.46
53	88	0.133		0.013	0.002		0.143		−0.008	−0.004	1.54	−69.62	−70.74	0.110	1.57	−69.55
54	89	0.175		0.020	−0.003		0.190		−0.011	0.000	2.33	−67.23	−68.59	0.100	2.39	−67.11
55	90	0.200		0.027	0.008		0.218		−0.015	−0.013	2.79	−63.01	−64.68	0.110	2.87	−62.84
56	91	0.208		0.040	0.012		0.228		−0.029	−0.020	3.09	−60.52	−61.56	0.120	3.22	−60.28
57	92	0.225		0.047	0.001		0.247		−0.035	−0.012	3.46	−55.83	−56.55	0.120	3.60	−55.56
58	93	0.242		0.040	−0.007		0.266		−0.024	−0.002	3.73	−52.82			3.87	−52.52
59	94	0.300		−0.027	−0.001		0.328		0.073	0.017	3.67	−48.04			3.92	−47.60
60	95	0.308		−0.040	0.012		0.337		0.093	0.011	3.73	−44.71			4.07	−44.15
61	96	0.317		−0.020	0.001		0.348		0.070	0.014	3.60	−39.51			3.86	−38.99
62	97	0.317		−0.007	−0.003		0.348		0.053	0.012	3.62	−35.72			3.87	−35.17
63	98	0.317		0.007	−0.006		0.349		0.035	0.009	3.70	−29.83			3.91	−29.28
64	99	0.317		0.020	−0.011		0.350		0.018	0.009	3.83	−25.46			4.07	−24.85
65	100	0.300		0.047	−0.030		0.332		−0.022	0.017	3.66	−19.38			3.97	−18.65
66	101	0.283		0.073	−0.053		0.314		−0.061	0.030	3.37	−14.98			4.01	−13.87
67	102	0.283		0.080	−0.059		0.314		−0.071	0.034	2.97	−8.72			3.74	−7.43
68	103	0.275		0.093	−0.055		0.306		−0.088	0.026	2.69	−3.87			3.53	−2.46
69	104	0.275		0.107	−0.052		0.307		−0.104	0.019	2.31	2.81			3.23	4.37
70	105	0.283		0.120	−0.052		0.318		−0.118	0.014	2.12	8.15			3.25	9.97
71	106	0.258		0.107	−0.043		0.288		−0.106	0.012	2.00	15.48			2.90	17.14
72	107	0.250		0.093	−0.042		0.278		−0.091	0.016	2.11	21.50			2.92	23.14
73	108	0.242		0.107	−0.052		0.269		−0.110	0.023	1.90	29.12			3.03	31.13
74	109	0.233		0.120	−0.060		0.260		−0.129	0.028	1.92	35.41			3.44	37.90
75	110	−0.308		0.020	−0.030		−0.315		0.017	0.028	2.68	44.34			3.18	45.87
76	111	−0.308		0.007	−0.030		−0.314		0.031	0.024	2.66	50.96			3.16	52.56
77	112	−0.150		0.073	0.040		−0.154		−0.074	−0.024	0.38	57.17			1.07	59.05
78	113	−0.150		0.060	0.032		−0.155		−0.060	−0.019	−0.01	63.75			0.49	65.52
79	114	−0.142		0.060	0.031		−0.146		−0.061	−0.019	−0.92	71.66			−0.42	73.51
80	115	−0.133		0.047	0.022		−0.138		−0.047	−0.013	−1.33	78.54			−1.01	80.31
81	116	0.017		0.007	−0.005		0.018		−0.008	0.005	−4.44	84.55			−4.43	86.10
82	117	0.000		0.000	−0.001		0.000		0.000	0.001	−5.07	91.52			−5.07	93.15
83	118	−0.017		−0.007	0.001		−0.018		0.008	−0.001	−4.83	101.17			−4.82	102.90
84	119	0.000		0.000	−0.001		0.000		0.000	0.001	−3.93	109.96			−3.93	111.79
85	120	0.083		−0.007	−0.011		0.089		0.011	0.012	−2.95	120.63			−2.88	122.63
86	121	0.100	0.053	0.013	−0.002	0.012	0.108	−0.072	−0.011	0.003	−1.91	129.85			−1.72	132.07

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 36$ (Kr)																
27	63	0.308		0.053	−0.039		0.341		−0.029	0.023	2.65	23.84			2.69	23.42
28	64	−0.292		−0.047	−0.077		−0.292		0.093	0.053	1.95	10.20			2.18	10.05
29	65	−0.283		−0.013	−0.066		−0.287		0.051	0.052	2.49	1.72			2.60	1.50
30	66	−0.292		−0.007	−0.091		−0.296		0.050	0.076	2.78	−9.41			3.00	−9.48
31	67	−0.300		0.007	−0.081		−0.305		0.035	0.070	3.40	−16.44			3.53	−16.54
32	68	−0.300		0.013	−0.095		−0.306		0.030	0.085	3.48	−26.39			3.67	−26.40
33	69	−0.308		0.027	−0.084		−0.315		0.015	0.079	3.68	−32.55			3.80	−32.60
34	70	−0.317		0.027	−0.100		−0.324		0.019	0.092	3.47	−41.50			3.66	−41.45
35	71	−0.342		0.033	−0.096		−0.349		0.019	0.089	3.76	−46.39			3.90	−46.38
36	72	−0.342		0.033	−0.092		−0.349		0.018	0.086	3.66	−54.03			3.84	−53.96
37	73	0.342		0.053	−0.052		0.381		−0.021	0.035	4.09	−56.86	−56.89	0.140	4.17	−56.88
38	74	0.358		0.053	−0.054		0.400		−0.017	0.036	3.71	−62.87	−62.17	0.060	3.84	−62.82
39	75	0.375		0.067	−0.049		0.421		−0.027	0.025	4.03	−64.83	−64.24	0.016	4.13	−64.81
40	76	0.358		0.060	−0.046		0.400		−0.024	0.025	3.93	−69.56	−68.98	0.011	4.07	−69.49
41	77	−0.225		0.060	0.017		−0.232		−0.048	−0.001	4.89	−69.96	−70.17	0.009	4.94	−69.99
42	78	−0.225		0.060	0.016		−0.232		−0.048	−0.001	4.40	−74.16	−74.16	0.007	4.47	−74.16
43	79	−0.242		0.067	0.022		−0.249		−0.053	−0.003	4.29	−74.78	−74.44	0.004	4.36	−74.77
44	80	0.058		0.000	−0.001		0.062		0.001	0.001	4.39	−77.50	−77.89	0.005	4.39	−77.56
45	81	0.067		0.000	−0.002		0.071		0.002	0.002	3.77	−77.83	−77.69	0.005	3.77	−77.89
46	82	0.067		0.007	−0.001		0.071		−0.007	0.000	2.74	−80.88	−80.59	0.005	2.74	−80.93
47	83	0.108		0.020	−0.002		0.116		−0.019	0.000	1.65	−80.92	−79.98	0.003	1.67	−80.95
48	84	0.058		0.007	−0.001		0.062		−0.007	0.001	0.96	−82.86	−82.43	0.003	0.96	−82.90
49	85	0.058		0.013	0.000		0.062		−0.014	−0.001	0.38	−81.68	−81.48	0.003	0.39	−81.72
50	86	0.050		0.007	0.000		0.053		−0.007	0.000	−0.40	−83.00	−83.26	0.005	−0.40	−83.03
51	87	0.058		−0.007	0.001		0.062		0.010	0.000	0.25	−79.93	−80.71	0.005	0.26	−79.94
52	88	0.058		0.000	0.000		0.062		0.001	0.000	0.93	−79.10	−79.69	0.014	0.93	−79.11
53	89	0.125		0.000	0.002		0.134		0.007	−0.002	1.75	−75.24	−76.72	0.050	1.77	−75.22
54	90	0.150		0.007	0.006		0.162		0.001	−0.007	2.50	−73.69	−74.96	0.021	2.55	−73.64
55	91	0.192		0.020	0.015		0.209		−0.007	−0.018	2.96	−69.61	−71.35	0.060	3.05	−69.49
56	92	0.208		0.033	0.018		0.228		−0.019	−0.024	3.21	−67.95	−68.71	0.060	3.36	−67.76
57	93	0.242		0.027	0.005		0.265		−0.007	−0.010	3.64	−63.33	−64.09	0.100	3.76	−63.15
58	94	0.283		−0.007	−0.014		0.310		0.042	0.021	3.69	−61.31			3.91	−61.00
59	95	0.300		−0.020	−0.003		0.328		0.064	0.016	3.59	−56.71			3.83	−56.35
60	96	0.308		−0.027	0.007		0.337		0.076	0.010	3.62	−54.16			3.91	−53.72
61	97	0.317		−0.013	−0.001		0.348		0.061	0.013	3.46	−49.11			3.71	−48.67
62	98	0.317		0.000	−0.006		0.349		0.044	0.012	3.49	−46.04			3.75	−45.57
63	99	0.325		0.013	−0.006		0.359		0.030	0.007	3.53	−40.31			3.76	−39.84
64	100	0.317		0.027	−0.016		0.350		0.009	0.011	3.62	−36.71			3.88	−36.17
65	101	0.308		0.040	−0.025		0.341		−0.011	0.014	3.47	−30.72			3.75	−30.11
66	102	0.300		0.053	−0.041		0.332		−0.031	0.025	3.28	−26.93			3.73	−26.11
67	103	0.300		0.073	−0.048		0.334		−0.056	0.024	2.88	−20.77			3.45	−19.78
68	104	0.292		0.087	−0.056		0.325		−0.077	0.028	2.46	−16.76			3.26	−15.50
69	105	0.292		0.100	−0.040		0.327		−0.090	0.008	2.21	−10.04			2.92	−8.81
70	106	0.292		0.113	−0.050		0.328		−0.107	0.013	2.02	−5.39			3.00	−3.83
71	107	0.267		0.100	−0.041		0.298		−0.095	0.011	1.86	1.82			2.64	3.23
72	108	0.250		0.093	−0.037		0.278		−0.090	0.011	2.21	7.40			2.94	8.83
73	109	0.250		0.100	−0.050		0.278		−0.100	0.022	1.98	14.91			2.95	16.63
74	110	−0.317		0.027	−0.023		−0.324		0.011	0.024	3.10	21.65			3.56	22.93
75	111	−0.317		0.013	−0.023		−0.324		0.026	0.020	3.01	29.64			3.42	30.95
76	112	−0.325		0.007	−0.025		−0.331		0.034	0.019	2.97	35.60			3.45	37.03
77	113	−0.142		0.080	0.044		−0.145		−0.083	−0.027	0.45	41.50			1.25	43.34
78	114	−0.133		0.073	0.037		−0.136		−0.076	−0.022	0.02	47.40			0.69	49.19
79	115	−0.133		0.067	0.034		−0.137		−0.070	−0.021	−0.93	55.20			−0.34	56.98
80	116	−0.117		0.060	0.026		−0.121		−0.063	−0.016	−1.69	61.10			−1.24	62.83
81	117	0.017		0.007	−0.005		0.018		−0.008	0.005	−4.20	67.64			−4.19	69.02
82	118	0.000		0.000	−0.001		0.000		0.000	0.001	−5.00	73.83			−5.01	75.29
83	119	−0.017		−0.007	0.001		−0.018		0.008	−0.001	−4.69	83.49			−4.69	85.04

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 36$ (Kr)																
84	120	0.000		0.000	−0.001		0.000		0.000	0.001	−3.77	91.71			−3.77	93.35
85	121	0.058		−0.020	−0.014		0.062		0.025	0.016	−2.97	102.13			−2.84	104.01
86	122	0.075	0.067	−0.007	0.001	0.006	0.082	−0.091	0.012	0.003	−1.88	110.81			−1.64	112.89
87	123	0.108	0.084	−0.033	0.005	−0.002	0.118	−0.116	0.048	0.005	−1.50	121.10			−0.97	123.56
88	124	0.150	0.093	−0.033	0.008	0.014	0.164	−0.128	0.053	0.006	−0.07	130.40			0.60	133.10
$Z = 37$ (Rb)																
29	66	0.308		0.040	−0.016		0.341		−0.009	0.006	3.25	13.70			3.21	13.34
30	67	0.308		0.047	−0.031		0.341		−0.020	0.017	3.40	2.21			3.41	1.94
31	68	0.300		0.053	−0.035		0.332		−0.030	0.019	4.09	−5.77			4.08	−6.01
32	69	0.300		0.060	−0.045		0.333		−0.040	0.026	4.18	−15.92			4.21	−16.09
33	70	−0.342		0.040	−0.082		−0.350		0.010	0.079	4.08	−23.38			4.17	−23.47
34	71	−0.350		0.040	−0.096		−0.358		0.014	0.091	3.90	−32.51			4.06	−32.50
35	72	−0.367		0.047	−0.088		−0.375		0.010	0.086	4.26	−38.30			4.35	−38.35
36	73	0.333		0.060	−0.071		0.371		−0.035	0.050	3.89	−46.43			3.97	−46.47
37	74	0.342		0.060	−0.070		0.381		−0.033	0.049	3.79	−51.16	−51.76	0.460	3.83	−51.22
38	75	0.350		0.060	−0.060		0.391		−0.029	0.039	3.39	−57.79	−57.28	0.090	3.47	−57.81
39	76	0.358		0.067	−0.055		0.401		−0.034	0.031	3.38	−61.01	−60.57	0.050	3.43	−61.06
40	77	0.350		0.067	−0.054		0.391		−0.036	0.030	3.54	−65.68	−64.92	0.018	3.63	−65.68
41	78	0.350		0.067	−0.049		0.391		−0.035	0.025	3.84	−67.65	−66.94	0.029	3.90	−67.68
42	79	−0.217		0.067	0.024		−0.224		−0.057	−0.006	4.66	−70.72	−70.79	0.011	4.71	−70.75
43	80	−0.225		0.067	0.025		−0.232		−0.056	−0.007	4.56	−72.22	−72.16	0.017	4.60	−72.26
44	81	0.058		0.007	−0.002		0.062		−0.007	0.002	4.55	−75.24	−75.46	0.010	4.56	−75.32
45	82	0.067		0.000	−0.002		0.071		0.002	0.002	4.02	−76.36	−76.21	0.017	4.02	−76.44
46	83	0.067		0.007	−0.002		0.071		−0.007	0.001	2.94	−79.62	−79.08	0.010	2.94	−79.70
47	84	0.075		0.007	0.000		0.080		−0.006	−0.001	2.14	−80.23	−79.75	0.003	2.14	−80.31
48	85	0.058		0.007	−0.001		0.062		−0.007	0.001	1.13	−82.65	−82.17	0.003	1.13	−82.72
49	86	0.058		0.013	−0.003		0.062		−0.014	0.002	0.44	−82.43	−82.75	0.003	0.45	−82.50
50	87	0.050		0.007	−0.001		0.053		−0.007	0.001	−0.35	−83.91	−84.59	0.003	−0.35	−83.97
51	88	0.058		0.000	0.000		0.062		0.001	0.000	0.31	−81.65	−82.60	0.004	0.31	−81.71
52	89	0.058		0.000	0.000		0.062		0.001	0.000	1.10	−80.86	−81.70	0.007	1.11	−80.91
53	90	0.083		0.007	0.001		0.089		−0.006	−0.002	2.02	−77.70	−79.35	0.013	2.03	−77.74
54	91	0.117		0.000	0.003		0.125		0.006	−0.003	2.78	−76.29	−77.79	0.010	2.80	−76.31
55	92	0.208		0.020	0.014		0.227		−0.004	−0.017	3.11	−73.11	−74.81	0.011	3.18	−73.06
56	93	0.250		0.027	0.004		0.274		−0.005	−0.009	3.38	−71.59	−72.69	0.015	3.48	−71.49
57	94	0.267		0.013	−0.004		0.292		0.015	0.003	3.66	−67.89	−68.52	0.018	3.75	−67.78
58	95	0.300		0.000	−0.018		0.329		0.038	0.023	3.66	−66.04	−65.83	0.022	3.87	−65.81
59	96	0.308		−0.007	−0.011		0.338		0.049	0.020	3.48	−62.26	−61.18	0.028	3.67	−62.02
60	97	0.317		−0.013	−0.003		0.348		0.060	0.015	3.45	−59.90	−58.34	0.040	3.68	−59.59
61	98	0.317		−0.007	−0.009		0.348		0.052	0.018	3.30	−55.58	−54.17	0.050	3.51	−55.27
62	99	0.317		0.007	−0.014		0.349		0.034	0.017	3.36	−52.61	−50.89	0.120	3.59	−52.25
63	100	0.325		0.020	−0.014		0.359		0.020	0.012	3.36	−47.65			3.56	−47.28
64	101	0.325		0.033	−0.021		0.360		0.003	0.013	3.47	−44.13			3.72	−43.69
65	102	0.317		0.040	−0.025		0.351		−0.008	0.014	3.31	−38.86			3.57	−38.37
66	103	0.308		0.053	−0.040		0.341		−0.029	0.024	3.18	−35.12			3.57	−34.45
67	104	0.300		0.067	−0.045		0.333		−0.049	0.024	2.87	−29.56			3.33	−28.78
68	105	0.300		0.080	−0.056		0.334		−0.066	0.029	2.46	−25.65			3.14	−24.60
69	106	0.300		0.093	−0.054		0.335		−0.082	0.023	2.08	−19.74			2.79	−18.61
70	107	0.300		0.100	−0.051		0.336		−0.089	0.017	2.08	−14.99			2.86	−13.75
71	108	0.317		0.100	−0.053		0.356		−0.086	0.018	1.73	−8.65			2.53	−7.34
72	109	0.333		0.087	−0.055		0.373		−0.066	0.023	2.04	−3.19			2.84	−1.82
73	110	0.258		0.093	−0.049		0.287		−0.090	0.022	2.18	4.03			2.98	5.45
74	111	−0.325		0.033	−0.033		−0.333		0.007	0.035	3.19	10.57			3.76	11.83
75	112	−0.333		0.020	−0.030		−0.340		0.023	0.027	3.19	18.01			3.66	19.24
76	113	−0.142		0.080	0.041		−0.145		−0.083	−0.024	1.54	22.26			2.22	23.77
77	114	−0.133		0.087	0.045		−0.135		−0.092	−0.027	0.60	29.11			1.42	30.83
78	115	−0.133		0.080	0.040		−0.136		−0.084	−0.024	0.03	34.80			0.75	36.49
79	116	−0.125		0.073	0.035		−0.128		−0.077	−0.021	−0.88	42.01			−0.27	43.66

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 37 (Rb)																
80	117	−0.108		0.060	0.025		−0.112		−0.064	−0.015	−1.71	47.79			−1.29	49.33
81	118	0.025		0.013	−0.005		0.027		−0.015	0.005	−4.19	53.74			−4.16	54.97
82	119	0.000		0.000	−0.001		0.000		0.000	0.001	−5.13	59.72			−5.13	61.01
83	120	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−4.69	68.90			−4.69	70.28
84	121	−0.008		0.000	0.001		−0.008		0.000	−0.001	−3.86	76.97			−3.86	78.43
85	122	0.042	0.039	−0.013	0.001	−0.008	0.045	−0.053	0.017	0.001	−2.92	86.94			−2.84	88.58
86	123	0.042	0.064	−0.007	0.001	−0.003	0.046	−0.087	0.011	0.002	−2.00	95.40			−1.81	97.24
87	124	0.050	0.094	0.020	0.000	0.007	0.058	−0.127	−0.019	0.005	−1.37	105.34			−0.93	107.53
88	125	0.142	0.103	−0.040	0.009	0.008	0.156	−0.143	0.061	0.007	−0.05	114.48			0.70	117.07
89	126	0.192		−0.047	−0.010		0.208		0.074	0.024	1.30	125.42			1.87	127.93
90	127	0.217		−0.060	−0.024		0.237		0.095	0.046	1.22	133.43			2.39	136.65
91	128	0.250		−0.053	−0.018		0.273		0.093	0.040	1.09	143.15			2.11	146.32
Z = 38 (Sr)																
30	68	0.342		0.047	−0.039		0.381		−0.012	0.025	2.95	10.57			3.00	10.34
31	69	0.317		0.053	−0.028		0.352		−0.024	0.012	3.68	2.43			3.68	2.19
32	70	0.325		0.053	−0.039		0.361		−0.024	0.022	3.79	−8.72			3.83	−8.88
33	71	0.300		0.073	−0.045		0.334		−0.056	0.021	4.23	−15.85			4.27	−15.98
34	72	0.333		0.060	−0.058		0.371		−0.033	0.038	3.94	−26.07			4.03	−26.13
35	73	0.333		0.060	−0.059		0.371		−0.033	0.039	4.00	−32.38			4.05	−32.46
36	74	0.358		0.060	−0.056		0.400		−0.026	0.035	3.46	−41.62			3.55	−41.65
37	75	0.358		0.060	−0.060		0.400		−0.026	0.039	3.28	−47.04			3.34	−47.09
38	76	0.375		0.067	−0.055		0.421		−0.029	0.030	2.92	−54.97			3.03	−54.96
39	77	0.375		0.073	−0.049		0.421		−0.035	0.022	2.95	−58.35	−57.89	0.150	3.02	−58.38
40	78	0.375		0.073	−0.045		0.421		−0.034	0.018	2.98	−64.06			3.09	−64.04
41	79	0.375		0.073	−0.041		0.422		−0.033	0.014	3.35	−66.15			3.44	−66.16
42	80	0.050		0.000	−0.001		0.053		0.001	0.001	5.45	−68.84	−70.20	0.030	5.45	−68.93
43	81	0.050		0.000	0.000		0.053		0.001	0.000	5.22	−70.65	−71.47	0.030	5.22	−70.75
44	82	0.050		0.000	−0.001		0.053		0.001	0.001	4.26	−75.50	−76.00	0.008	4.27	−75.60
45	83	0.050		0.000	−0.002		0.053		0.001	0.002	3.76	−76.77	−76.80	0.013	3.76	−76.87
46	84	0.050		0.000	−0.001		0.053		0.001	0.001	2.70	−80.88	−80.64	0.004	2.70	−80.98
47	85	0.050		0.000	0.003		0.053		0.001	−0.003	1.95	−81.61	−81.10	0.004	1.95	−81.71
48	86	0.050		0.007	−0.001		0.053		−0.007	0.001	0.79	−85.02	−84.52	0.002	0.80	−85.12
49	87	0.050		0.013	−0.003		0.053		−0.015	0.002	0.05	−85.01	−84.88	0.002	0.05	−85.11
50	88	0.042		0.007	0.000		0.045		−0.008	0.000	−0.97	−87.54	−87.92	0.002	−0.97	−87.64
51	89	0.050		−0.007	−0.001		0.053		0.009	0.001	−0.08	−85.21	−86.21	0.002	−0.07	−85.30
52	90	0.050		0.000	0.000		0.053		0.001	0.000	0.82	−85.12	−85.94	0.003	0.82	−85.21
53	91	0.050		0.007	0.001		0.053		−0.007	−0.001	1.80	−82.05	−83.65	0.009	1.81	−82.13
54	92	0.075		0.000	0.002		0.080		0.002	−0.002	2.76	−81.23	−82.92	0.013	2.77	−81.30
55	93	0.192		0.007	0.017		0.208		0.009	−0.017	3.30	−77.99	−80.16	0.016	3.37	−77.99
56	94	0.233		0.020	0.014		0.255		0.001	−0.017	3.26	−77.55	−78.84	0.007	3.37	−77.49
57	95	0.283		0.013	0.002		0.310		0.019	−0.002	3.33	−74.19	−75.09	0.040	3.45	−74.11
58	96	0.308		0.000	−0.008		0.338		0.041	0.014	3.44	−73.01	−72.93	0.040	3.63	−72.84
59	97	0.317		0.000	−0.005		0.349		0.044	0.011	3.30	−69.31	−68.80	0.060	3.49	−69.13
60	98	0.325		−0.007	0.003		0.357		0.056	0.007	3.26	−67.71	−66.47	0.050	3.49	−67.47
61	99	0.333		0.000	0.005		0.367		0.050	0.002	3.16	−63.46	−62.15	0.130	3.37	−63.21
62	100	0.333		0.013	−0.002		0.368		0.033	0.004	3.15	−61.29	−60.22	0.130	3.38	−61.00
63	101	0.333		0.020	−0.001		0.368		0.025	0.000	3.12	−56.47			3.32	−56.17
64	102	0.333		0.033	−0.008		0.369		0.008	0.001	3.22	−53.69			3.46	−53.33
65	103	0.325		0.040	−0.014		0.360		−0.004	0.004	3.07	−48.51			3.30	−48.13
66	104	0.325		0.053	−0.027		0.361		−0.022	0.011	2.97	−45.45			3.30	−44.93
67	105	0.317		0.067	−0.037		0.353		−0.043	0.015	2.61	−40.04			3.01	−39.42
68	106	0.317		0.080	−0.049		0.354		−0.061	0.022	2.29	−36.74			2.88	−35.88
69	107	0.308		0.093	−0.047		0.345		−0.078	0.015	1.97	−30.86			2.60	−29.93
70	108	0.308		0.107	−0.046		0.346		−0.095	0.009	1.97	−26.80			2.74	−25.67
71	109	0.333		0.100	−0.047		0.375		−0.080	0.011	1.85	−20.32			2.55	−19.21
72	110	0.350		0.080	−0.045		0.393		−0.051	0.016	2.35	−15.34			2.99	−14.24
73	111	0.350		0.080	−0.046		0.393		−0.051	0.017	2.32	−8.38			2.97	−7.22

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 38 (Sr)																
74	112	−0.292		0.040	−0.023		−0.300		−0.009	0.029	3.09	−2.73			3.52	−1.73
75	113	−0.150		0.087	0.044		−0.153		−0.090	−0.024	1.93	3.47			2.64	4.81
76	114	−0.150		0.087	0.046		−0.153		−0.090	−0.026	1.27	8.08			2.05	9.54
77	115	−0.142		0.093	0.049		−0.144		−0.098	−0.028	0.34	14.85			1.24	16.51
78	116	−0.133		0.080	0.040		−0.136		−0.084	−0.024	−0.09	20.04			0.60	21.56
79	117	−0.125		0.073	0.035		−0.128		−0.077	−0.021	−1.00	27.18			−0.42	28.66
80	118	−0.117		0.067	0.028		−0.120		−0.071	−0.016	−1.76	32.40			−1.28	33.85
81	119	−0.008		0.007	0.004		−0.008		−0.008	−0.004	−4.34	38.20			−4.33	39.25
82	120	0.000		0.000	−0.001		0.000		0.000	0.001	−5.18	43.66			−5.18	44.78
83	121	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−4.67	52.85			−4.67	54.06
84	122	−0.008		0.000	0.001		−0.008		0.000	−0.001	−3.74	60.41			−3.74	61.70
85	123	−0.017		0.007	−0.002		−0.018		−0.008	0.002	−3.14	69.99			−3.13	71.37
86	124	−0.017		0.007	0.000		−0.018		−0.008	0.000	−1.97	78.10			−1.97	79.57
87	125	0.025	0.095	0.013	0.000	0.002	0.031	−0.128	−0.011	0.006	−1.45	87.88			−1.04	89.84
88	126	0.150	0.097	−0.040	0.010	0.010	0.164	−0.134	0.062	0.006	0.48	97.04			1.17	99.39
89	127	0.183		−0.053	−0.004		0.198		0.080	0.019	1.45	107.55			2.01	109.85
90	128	0.208		−0.067	−0.018		0.227		0.103	0.041	1.37	114.98			2.48	117.94
91	129	0.258		−0.053	−0.004		0.281		0.096	0.027	1.60	125.01			2.39	127.76
92	130	0.258		−0.067	−0.002		0.281		0.114	0.030	1.58	132.79			2.66	135.92
93	131	0.267		−0.060	0.003		0.291		0.107	0.023	1.32	142.58			2.24	145.65
Z = 39 (Y)																
31	70	0.358		0.080	−0.034		0.402		−0.046	0.005	3.67	13.76			3.63	13.50
32	71	0.367		0.073	−0.038		0.412		−0.035	0.012	3.88	2.51			3.88	2.32
33	72	0.358		0.073	−0.043		0.401		−0.039	0.017	4.14	−5.78			4.11	−5.97
34	73	0.367		0.073	−0.047		0.412		−0.037	0.020	4.05	−16.01			4.07	−16.13
35	74	0.367		0.073	−0.048		0.412		−0.037	0.021	4.02	−23.35			4.00	−23.49
36	75	0.367		0.073	−0.050		0.412		−0.038	0.023	3.52	−32.77			3.54	−32.85
37	76	0.367		0.073	−0.054		0.412		−0.038	0.027	3.28	−39.18			3.27	−39.28
38	77	0.375		0.073	−0.044		0.421		−0.034	0.017	2.80	−47.42			2.84	−47.48
39	78	0.383		0.080	−0.044		0.432		−0.040	0.013	2.82	−52.11			2.83	−52.20
40	79	0.375		0.080	−0.036		0.422		−0.041	0.006	2.75	−58.50			2.80	−58.54
41	80	0.383		0.080	−0.025		0.432		−0.036	−0.004	3.17	−61.44			3.19	−61.52
42	81	0.375		0.080	−0.028		0.423		−0.039	−0.001	3.45	−66.13	−65.95	0.070	3.53	−66.16
43	82	0.050		0.000	−0.001		0.053		0.001	0.001	5.26	−66.79	−68.18	0.100	5.26	−66.89
44	83	0.050		0.000	−0.001		0.053		0.001	0.001	4.30	−71.82	−72.34	0.040	4.30	−71.92
45	84	0.050		0.000	−0.002		0.053		0.001	0.002	3.80	−73.93	−74.23	0.170	3.80	−74.04
46	85	0.050		0.000	0.000		0.053		0.001	0.000	2.73	−78.22	−77.85	0.025	2.73	−78.33
47	86	0.050		0.000	0.002		0.053		0.001	−0.002	1.95	−79.82	−79.28	0.014	1.95	−79.93
48	87	0.050		0.007	−0.002		0.053		−0.007	0.002	0.78	−83.41	−83.01	0.003	0.78	−83.53
49	88	0.050		0.007	−0.003		0.053		−0.007	0.003	0.08	−84.19	−84.30	0.003	0.08	−84.31
50	89	0.033		0.007	0.000		0.035		−0.008	0.000	−1.19	−87.12	−87.70	0.002	−1.19	−87.25
51	90	0.050		−0.007	−0.001		0.053		0.009	0.001	−0.11	−85.41	−86.49	0.002	−0.11	−85.53
52	91	0.050		0.000	0.000		0.053		0.001	0.000	0.85	−85.41	−86.35	0.003	0.85	−85.53
53	92	0.050		0.007	0.001		0.053		−0.007	−0.001	1.89	−83.07	−84.83	0.010	1.89	−83.19
54	93	−0.133		0.013	0.005		−0.139		−0.008	−0.003	2.68	−82.57	−84.25	0.011	2.71	−82.66
55	94	0.183		0.000	0.016		0.198		0.015	−0.015	3.42	−79.91	−82.35	0.005	3.46	−79.97
56	95	0.300		0.033	0.000		0.331		−0.001	−0.007	3.54	−79.43	−81.21	0.006	3.66	−79.41
57	96	0.325		0.033	−0.010		0.360		0.005	0.003	3.63	−76.82	−78.32	0.040	3.76	−76.78
58	97	0.325		0.020	−0.006		0.359		0.021	0.004	3.44	−76.06	−76.27	0.060	3.60	−75.99
59	98	0.333		0.013	−0.003		0.368		0.033	0.005	3.33	−73.09	−72.33	0.040	3.47	−73.01
60	99	0.333		0.013	0.002		0.368		0.034	0.000	3.20	−71.70	−70.20	0.070	3.38	−71.57
61	100	0.333		0.013	0.010		0.368		0.035	−0.008	3.13	−68.15	−67.30	0.080	3.29	−68.02
62	101	0.342		0.027	0.004		0.379		0.020	−0.008	3.12	−66.11			3.32	−65.92
63	102	0.342		0.033	0.007		0.380		0.013	−0.013	3.09	−62.01			3.28	−61.80
64	103	0.342		0.047	−0.006		0.381		−0.006	−0.007	3.19	−59.34			3.41	−59.07
65	104	0.333		0.053	−0.012		0.371		−0.017	−0.004	3.03	−54.88			3.24	−54.60
66	105	0.333		0.067	−0.025		0.372		−0.036	0.003	2.96	−51.89			3.27	−51.48

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 39 (Y)																
67	106	0.325		0.080	−0.035		0.364		−0.056	0.008	2.61	−47.16			2.99	−46.65
68	107	0.325		0.087	−0.043		0.364		−0.066	0.013	2.33	−43.92			2.83	−43.24
69	108	0.317		0.100	−0.045		0.356		−0.084	0.010	1.96	−38.78			2.53	−38.00
70	109	0.317		0.107	−0.043		0.357		−0.092	0.006	1.95	−34.83			2.60	−33.92
71	110	0.342		0.107	−0.044		0.386		−0.085	0.004	1.91	−28.93			2.56	−27.98
72	111	0.350		0.087	−0.040		0.394		−0.058	0.008	2.24	−24.20			2.80	−23.31
73	112	0.358		0.093	−0.044		0.404		−0.063	0.009	2.69	−17.43			3.30	−16.43
74	113	0.342		0.087	−0.042		0.384		−0.061	0.010	2.56	−12.76			3.17	−11.70
75	114	−0.150		0.080	0.041		−0.153		−0.082	−0.023	2.17	−6.44			2.74	−5.38
76	115	−0.150		0.080	0.043		−0.153		−0.082	−0.025	1.51	−1.92			2.13	−0.74
77	116	−0.150		0.087	0.049		−0.153		−0.090	−0.029	0.44	4.09			1.20	5.46
78	117	−0.142		0.080	0.042		−0.145		−0.083	−0.025	−0.05	9.15			0.61	10.48
79	118	−0.133		0.073	0.036		−0.136		−0.076	−0.021	−0.96	15.66			−0.41	16.96
80	119	−0.133		0.067	0.031		−0.137		−0.070	−0.018	−1.42	21.10			−0.95	22.39
81	120	0.000		−0.013	0.000		0.000		0.015	0.000	−3.89	26.39			−3.88	27.29
82	121	0.000		−0.007	−0.001		0.000		0.008	0.001	−5.05	31.47			−5.05	32.44
83	122	0.000		0.013	0.000		0.000		−0.015	0.000	−4.43	40.17			−4.42	41.22
84	123	0.000		−0.007	−0.001		0.000		0.008	0.001	−3.51	47.65			−3.51	48.78
85	124	0.000	0.030	−0.013	0.000	0.000	0.000	−0.041	0.016	0.001	−2.83	56.72			−2.78	57.97
86	125	0.000	0.068	−0.013	0.000	0.000	0.002	−0.092	0.017	0.003	−1.66	64.77			−1.46	66.26
87	126	0.000	0.093	−0.027	0.000	−0.004	0.004	−0.127	0.036	0.006	−1.05	74.05			−0.62	75.86
88	127	0.142	0.091	−0.047	0.010	0.007	0.155	−0.126	0.069	0.006	0.50	82.79			1.15	84.90
89	128	0.183		−0.060	0.001		0.198		0.089	0.016	1.47	92.72			2.05	94.85
90	129	0.200		−0.067	−0.015		0.218		0.101	0.036	1.59	100.30			2.54	102.90
91	130	0.233		−0.067	−0.006		0.254		0.108	0.031	1.50	109.44			2.41	112.11
92	131	0.250		−0.073	−0.001		0.273		0.120	0.030	1.71	117.40			2.78	120.31
93	132	0.250		−0.067	0.002		0.272		0.112	0.025	1.37	126.55			2.29	129.42
94	133	0.267		−0.053	0.006		0.291		0.098	0.017	1.65	134.84			2.39	137.63
95	134	0.275		−0.047	0.014		0.299		0.093	0.008	1.56	144.50			2.21	147.30
Z = 40 (Zr)																
32	72	0.367		0.093	−0.036		0.414		−0.059	0.001	3.74	11.34			3.78	11.22
33	73	0.325		0.087	−0.040		0.364		−0.065	0.010	4.13	2.98			4.15	2.86
34	74	0.367		0.087	−0.048		0.413		−0.054	0.015	3.95	−8.30			4.00	−8.36
35	75	0.358		0.087	−0.050		0.403		−0.057	0.017	3.92	−15.84			3.94	−15.92
36	76	0.375		0.080	−0.046		0.422		−0.043	0.016	3.55	−26.07			3.60	−26.11
37	77	0.367		0.080	−0.053		0.413		−0.047	0.023	3.29	−32.69			3.31	−32.75
38	78	0.383		0.080	−0.046		0.432		−0.040	0.015	2.84	−41.82			2.91	−41.84
39	79	0.383		0.087	−0.038		0.433		−0.047	0.004	2.77	−47.18			2.80	−47.24
40	80	0.383		0.087	−0.030		0.433		−0.045	−0.003	2.71	−54.84			2.79	−54.85
41	81	0.400		0.093	−0.021		0.454		−0.044	−0.015	3.09	−58.01	−58.79	0.300	3.14	−58.05
42	82	0.050		0.000	−0.001		0.053		0.001	0.001	5.21	−61.74	−64.18	0.510	5.21	−61.84
43	83	0.050		0.000	0.000		0.053		0.001	0.000	4.98	−64.61	−66.47	0.090	4.98	−64.71
44	84	0.050		0.000	−0.001		0.053		0.001	0.001	4.00	−70.53			4.00	−70.64
45	85	0.050		0.000	−0.001		0.053		0.001	0.001	3.50	−72.82	−73.15	0.100	3.50	−72.93
46	86	0.050		0.000	0.000		0.053		0.001	0.000	2.42	−77.96			2.42	−78.08
47	87	0.050		0.000	0.003		0.053		0.001	−0.003	1.65	−79.72	−79.35	0.008	1.65	−79.85
48	88	0.050		0.000	0.000		0.053		0.001	0.000	0.43	−84.19	−83.63	0.010	0.43	−84.32
49	89	0.050		0.007	−0.002		0.053		−0.007	0.002	−0.38	−85.24	−84.87	0.003	−0.38	−85.37
50	90	0.033		0.007	0.000		0.035		−0.008	0.000	−1.63	−88.98	−88.77	0.002	−1.63	−89.11
51	91	0.050		−0.007	−0.001		0.053		0.009	0.001	−0.47	−87.33	−87.89	0.002	−0.47	−87.47
52	92	0.050		0.000	0.000		0.053		0.001	0.000	0.46	−88.16	−88.46	0.002	0.46	−88.30
53	93	0.050		0.000	0.001		0.053		0.001	−0.001	1.53	−85.94	−87.12	0.002	1.53	−86.09
54	94	0.058		−0.007	0.000		0.062		0.010	0.001	2.54	−86.00	−87.27	0.002	2.55	−86.14
55	95	0.167		−0.007	0.019		0.180		0.022	−0.017	3.15	−83.60	−85.66	0.002	3.20	−83.70
56	96	0.200		0.007	0.021		0.217		0.010	−0.021	3.49	−83.69	−85.44	0.003	3.57	−83.74
57	97	0.250		0.007	0.014		0.273		0.020	−0.013	3.71	−81.08	−82.95	0.003	3.80	−81.12
58	98	0.300		0.013	0.001		0.330		0.024	−0.001	3.55	−81.04	−81.28	0.020	3.70	−81.02

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 40$ (Zr)																
59	99	0.317		0.007	0.003		0.349		0.036	0.000	3.47	−78.16	−77.79	0.040	3.62	−78.13
60	100	0.325		0.007	0.008		0.358		0.039	−0.004	3.34	−77.53	−76.61	0.040	3.53	−77.44
61	101	0.333		0.013	0.017		0.368		0.036	−0.015	3.23	−74.13	−73.40	0.050	3.43	−74.02
62	102	0.333		0.027	0.007		0.369		0.017	−0.011	3.20	−72.83	−71.74	0.050	3.41	−72.69
63	103	0.342		0.033	0.014		0.380		0.014	−0.020	3.19	−68.82	−68.38	0.110	3.42	−68.65
64	104	0.342		0.047	−0.001		0.381		−0.005	−0.012	3.28	−66.89			3.52	−66.67
65	105	0.333		0.060	−0.008		0.372		−0.025	−0.010	3.16	−62.49			3.41	−62.25
66	106	0.333		0.073	−0.021		0.373		−0.043	−0.003	3.14	−60.16			3.47	−59.81
67	107	0.325		0.080	−0.029		0.364		−0.055	0.002	2.77	−55.56			3.13	−55.15
68	108	0.325		0.093	−0.038		0.365		−0.072	0.005	2.52	−52.97			3.02	−52.39
69	109	0.317		0.107	−0.041		0.357		−0.092	0.004	2.11	−47.97			2.70	−47.26
70	110	0.325		0.120	−0.042		0.368		−0.105	−0.001	2.17	−44.62			2.91	−43.72
71	111	0.342		0.113	−0.039		0.387		−0.091	−0.003	2.09	−38.86			2.75	−38.00
72	112	0.350		0.100	−0.035		0.395		−0.073	−0.002	2.36	−34.87			2.96	−34.02
73	113	0.358		0.100	−0.041		0.404		−0.071	0.003	2.83	−28.15			3.45	−27.25
74	114	−0.192		0.080	0.038		−0.197		−0.076	−0.017	2.41	−24.43			2.90	−23.60
75	115	−0.167		0.087	0.046		−0.170		−0.088	−0.025	1.72	−18.49			2.35	−17.48
76	116	−0.158		0.080	0.042		−0.162		−0.081	−0.023	1.16	−14.52			1.74	−13.50
77	117	−0.150		0.087	0.046		−0.153		−0.090	−0.026	0.14	−8.54			0.83	−7.35
78	118	−0.150		0.080	0.042		−0.153		−0.082	−0.024	−0.42	−4.18			0.20	−3.01
79	119	−0.142		0.073	0.037		−0.146		−0.075	−0.022	−1.34	2.25			−0.81	3.39
80	120	−0.133		0.067	0.029		−0.137		−0.069	−0.016	−1.77	7.10			−1.34	8.21
81	121	0.000		−0.013	0.000		0.000		0.015	0.000	−4.20	12.36			−4.18	13.12
82	122	0.000		0.000	−0.001		0.000		0.000	0.001	−5.38	16.81			−5.38	17.62
83	123	0.000		0.013	0.000		0.000		−0.015	0.000	−4.71	25.50			−4.69	26.39
84	124	0.000		−0.007	0.000		0.000		0.008	0.000	−3.78	32.39			−3.78	33.35
85	125	0.008	0.034	−0.020	0.000	0.000	0.009	−0.046	0.024	0.001	−3.05	41.44			−2.97	42.56
86	126	0.000	0.063	−0.013	0.000	0.000	0.002	−0.085	0.017	0.003	−1.91	48.87			−1.74	50.16
87	127	0.108	0.085	−0.053	0.009	−0.008	0.118	−0.118	0.072	0.005	−0.84	58.56			−0.24	60.35
88	128	0.150	0.071	−0.047	0.011	0.012	0.163	−0.098	0.069	0.003	0.78	66.78			1.31	68.59
89	129	0.167	0.044	−0.067	0.014	0.001	0.180	−0.061	0.096	0.004	1.48	76.38			2.15	78.42
90	130	0.200		−0.073	−0.009		0.218		0.109	0.032	1.82	83.62			2.77	86.02
91	131	0.208		−0.080	−0.009		0.227		0.120	0.036	1.49	92.47			2.61	95.14
92	132	0.233		−0.080	−0.002		0.254		0.125	0.032	1.84	100.00			2.99	102.79
93	133	0.242		−0.067	0.002		0.263		0.110	0.024	1.63	109.24			2.52	111.86
94	134	0.250		−0.060	0.007		0.272		0.103	0.017	1.84	116.91			2.63	119.54
95	135	0.258		−0.053	0.016		0.280		0.097	0.006	1.80	126.56			2.49	129.19
96	136	0.275		−0.040	0.023		0.299		0.085	−0.004	2.00	134.49			2.65	137.17
97	137	0.283		−0.020	0.021		0.309		0.062	−0.009	1.75	144.18			2.24	146.82
$Z = 41$ (Nb)																
33	74	−0.250		0.067	0.004		−0.258		−0.050	0.013	4.07	14.39			4.06	14.28
34	75	0.408		0.080	−0.022		0.462		−0.026	−0.008	4.44	3.47			4.39	3.33
35	76	0.400		0.073	−0.025		0.452		−0.021	−0.001	4.45	−4.97			4.36	−5.13
36	77	0.400		0.080	−0.030		0.452		−0.031	0.000	3.99	−15.46			3.97	−15.56
37	78	0.400		0.087	−0.043		0.453		−0.042	0.008	3.79	−22.94			3.74	−23.06
38	79	0.400		0.087	−0.032		0.453		−0.039	−0.002	3.20	−32.41			3.20	−32.47
39	80	0.400		0.087	−0.028		0.453		−0.038	−0.006	3.09	−38.71			3.06	−38.81
40	81	0.408		0.093	−0.023		0.464		−0.041	−0.013	3.03	−46.55			3.05	−46.60
41	82	0.425		0.100	−0.014		0.486		−0.041	−0.026	3.36	−51.02			3.35	−51.11
42	83	−0.208		0.087	0.043		−0.213		−0.082	−0.018	3.89	−56.89	−58.97	0.310	3.93	−56.93
43	84	0.050	0.019	0.000	0.000	−0.004	0.053	−0.026	0.001	0.000	5.03	−59.25			5.03	−59.34
44	85	0.050	0.017	0.000	0.000	−0.004	0.053	−0.023	0.001	0.000	4.04	−65.35	−67.15	0.220	4.04	−65.45
45	86	0.050	0.014	−0.007	0.001	−0.004	0.053	−0.019	0.010	0.000	3.52	−68.51			3.52	−68.61
46	87	0.050	0.014	0.000	0.000	−0.004	0.053	−0.019	0.001	0.000	2.46	−73.80	−74.18	0.060	2.46	−73.91
47	88	0.050	0.012	−0.007	0.001	0.000	0.053	−0.016	0.009	0.000	1.67	−76.41			1.67	−76.53
48	89	0.050	0.013	0.000	0.000	−0.003	0.053	−0.018	0.001	0.000	0.46	−81.03	−80.58	0.040	0.46	−81.17
49	90	0.050	0.012	0.007	0.000	−0.005	0.053	−0.016	−0.007	0.000	−0.34	−82.88	−82.66	0.005	−0.34	−83.02

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 41 (Nb)																
50	91	0.042	0.014	−0.007	0.001	−0.002	0.045	−0.019	0.009	0.000	−1.44	−86.62	−86.64	0.003	−1.44	−86.77
51	92	0.050		−0.013	−0.005		0.053		0.017	0.006	−0.57	−86.07	−86.45	0.003	−0.57	−86.22
52	93	0.050	0.010	−0.007	0.001	−0.003	0.053	−0.014	0.009	0.000	0.44	−86.97	−87.21	0.002	0.44	−87.12
53	94	0.058	0.013	−0.007	0.001	−0.002	0.062	−0.018	0.010	0.000	1.51	−85.53	−86.37	0.002	1.51	−85.69
54	95	0.075		−0.013	−0.001		0.080		0.018	0.002	2.45	−85.80	−86.78	0.002	2.46	−85.96
55	96	0.158		−0.013	0.016		0.170		0.027	−0.013	2.97	−84.27	−85.61	0.004	3.00	−84.40
56	97	0.192		0.000	0.021		0.208		0.017	−0.020	3.35	−84.44	−85.61	0.003	3.41	−84.55
57	98	0.242		0.007	0.016		0.264		0.018	−0.015	3.74	−82.42	−83.53	0.006	3.81	−82.52
58	99	0.258		0.000	0.010		0.281		0.030	−0.007	3.70	−82.39	−82.33	0.013	3.79	−82.46
59	100	0.325		0.007	0.010		0.358		0.040	−0.006	3.71	−80.16	−79.94	0.026	3.84	−80.20
60	101	0.333		0.013	0.014		0.368		0.035	−0.012	3.50	−79.73	−78.92	0.030	3.66	−79.71
61	102	0.342		0.013	0.025		0.378		0.040	−0.022	3.37	−77.08	−76.35	0.040	3.56	−77.03
62	103	0.350		0.033	0.017		0.389		0.017	−0.023	3.31	−75.94	−75.32	0.070	3.52	−75.84
63	104	0.350		0.033	0.021		0.389		0.018	−0.026	3.31	−72.63	−72.23	0.110	3.53	−72.52
64	105	0.350		0.047	0.007		0.391		−0.001	−0.019	3.44	−70.76	−70.86	0.100	3.66	−70.62
65	106	0.342		0.053	−0.001		0.382		−0.012	−0.014	3.38	−67.01			3.58	−66.88
66	107	0.333		0.067	−0.014		0.372		−0.034	−0.007	3.38	−64.76			3.64	−64.55
67	108	0.317		0.073	−0.027		0.354		−0.048	0.003	3.14	−60.73			3.40	−60.48
68	109	0.317		0.087	−0.037		0.355		−0.067	0.007	2.89	−58.24			3.29	−57.83
69	110	0.308		0.093	−0.038		0.345		−0.077	0.007	2.49	−53.90			2.91	−53.44
70	111	0.308		0.107	−0.038		0.347		−0.093	0.002	2.49	−50.71			3.04	−50.09
71	112	0.342		0.100	−0.034		0.386		−0.075	−0.002	2.39	−45.63			2.87	−45.05
72	113	0.375		0.093	−0.033		0.424		−0.056	−0.003	3.19	−41.20			3.67	−40.58
73	114	−0.217		0.080	0.025		−0.223		−0.072	−0.004	2.94	−35.87			3.29	−35.33
74	115	−0.200		0.080	0.034		−0.205		−0.075	−0.013	2.52	−32.22			2.94	−31.58
75	116	−0.175		0.087	0.044		−0.179		−0.087	−0.022	1.72	−27.05			2.27	−26.23
76	117	−0.167		0.087	0.044		−0.171		−0.088	−0.023	1.16	−23.14			1.75	−22.23
77	118	−0.158		0.087	0.044		−0.161		−0.089	−0.024	0.16	−17.79			0.77	−16.81
78	119	−0.150		0.080	0.038		−0.154		−0.082	−0.020	−0.39	−13.49			0.14	−12.53
79	120	−0.150		0.073	0.036		−0.154		−0.074	−0.020	−1.37	−7.74			−0.90	−6.79
80	121	−0.150		0.067	0.030		−0.155		−0.068	−0.016	−1.71	−2.88			−1.31	−1.93
81	122	−0.017		0.013	0.006		−0.018		−0.015	−0.006	−4.47	1.44			−4.45	2.06
82	123	0.000		−0.007	−0.002		0.000		0.008	0.002	−5.32	6.15			−5.32	6.82
83	124	−0.025		−0.013	0.002		−0.026		0.016	−0.002	−4.74	14.14			−4.73	14.89
84	125	−0.008		−0.007	0.002		−0.008		0.008	−0.002	−3.81	20.97			−3.81	21.78
85	126	0.033		−0.027	−0.019		0.036		0.033	0.020	−3.01	29.51			−2.84	30.54
86	127	0.025	0.057	−0.027	0.001	−0.015	0.028	−0.078	0.034	0.002	−2.02	36.72			−1.84	37.85
87	128	0.117	0.064	−0.053	0.009	−0.008	0.127	−0.089	0.072	0.003	−0.58	46.20			−0.13	47.68
88	129	0.150	0.053	−0.047	0.011	0.012	0.162	−0.073	0.069	0.001	0.79	54.11			1.20	55.62
89	130	0.167	0.035	−0.067	0.014	0.003	0.180	−0.049	0.096	0.003	1.43	63.08			2.03	64.87
90	131	0.192		−0.073	−0.010		0.209		0.107	0.032	1.79	70.29			2.66	72.42
91	132	0.200		−0.080	−0.009		0.218		0.118	0.034	1.58	78.69			2.59	81.06
92	133	0.225		−0.080	−0.002		0.245		0.123	0.030	1.86	86.10			2.91	88.60
93	134	0.225		−0.073	0.001		0.245		0.114	0.025	1.72	94.85			2.61	97.27
94	135	0.233		−0.067	0.007		0.253		0.108	0.017	1.95	102.49			2.74	104.91
95	136	0.250		−0.053	0.016		0.271		0.095	0.005	1.87	111.56			2.49	113.91
96	137	0.258		−0.047	0.023		0.280		0.090	−0.004	2.06	119.43			2.69	121.89
97	138	0.267		−0.027	0.023		0.290		0.067	−0.010	1.82	128.59			2.29	130.99
98	139	0.283		0.000	0.022		0.310		0.038	−0.017	1.88	136.59			2.31	139.05
99	140	0.292		0.013	0.021		0.321		0.024	−0.021	1.47	145.83			1.91	148.41
Z = 42 (Mo)																
35	77	−0.292		0.073	−0.004		−0.301		−0.047	0.023	4.05	3.59			4.05	3.56
36	78	−0.233		0.080	0.023		−0.240		−0.069	−0.001	4.37	−7.05			4.41	−7.04
37	79	−0.217		0.080	0.028		−0.223		−0.072	−0.006	4.79	−14.10			4.81	−14.11
38	80	0.400		0.080	−0.032		0.452		−0.031	0.002	3.30	−25.37			3.31	−25.38
39	81	0.408		0.087	−0.029		0.463		−0.036	−0.005	3.28	−31.76			3.26	−31.81
40	82	−0.208		0.087	0.044		−0.213		−0.082	−0.019	4.12	−39.59			4.17	−39.58

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 42$ (Mo)																
41	83	−0.208		0.087	0.042		−0.213		−0.081	−0.017	4.06	−44.99			4.09	−45.01
42	84	0.050		0.000	−0.002		0.053		0.001	0.002	4.84	−51.84			4.84	−51.90
43	85	0.050		0.000	0.000		0.053		0.001	0.000	4.61	−55.75			4.61	−55.82
44	86	0.050		0.000	−0.001		0.053		0.001	0.001	3.59	−62.72			3.59	−62.81
45	87	0.050		0.000	−0.002		0.053		0.001	0.002	3.09	−66.03	−67.44	0.310	3.09	−66.12
46	88	0.050		0.000	0.000		0.053		0.001	0.000	1.99	−72.20			1.99	−72.31
47	89	0.050		0.000	0.003		0.053		0.001	−0.003	1.21	−74.96	−75.00	0.015	1.21	−75.08
48	90	0.050		0.000	0.000		0.053		0.001	0.000	−0.04	−80.44	−80.17	0.006	−0.04	−80.57
49	91	0.050		0.007	−0.002		0.053		−0.007	0.002	−0.82	−82.42	−82.21	0.012	−0.82	−82.56
50	92	0.033		0.007	0.000		0.035		−0.008	0.000	−2.12	−87.17	−86.81	0.004	−2.12	−87.32
51	93	0.050		−0.007	0.002		0.053		0.009	−0.002	−1.07	−86.59	−86.80	0.004	−1.07	−86.75
52	94	0.050		0.000	0.000		0.053		0.001	0.000	−0.12	−88.34	−88.41	0.002	−0.12	−88.51
53	95	0.050		0.000	0.001		0.053		0.001	−0.001	0.97	−87.03	−87.71	0.002	0.97	−87.20
54	96	0.075		−0.013	0.001		0.080		0.018	0.000	1.79	−88.20	−88.79	0.002	1.80	−88.37
55	97	0.150		−0.020	0.019		0.161		0.035	−0.015	2.46	−86.64	−87.54	0.002	2.50	−86.79
56	98	0.167		−0.007	0.022		0.180		0.022	−0.020	2.98	−87.44	−88.11	0.002	3.04	−87.58
57	99	0.192		−0.007	0.021		0.207		0.026	−0.018	3.45	−85.47	−85.97	0.002	3.51	−85.61
58	100	0.225		0.000	0.017		0.244		0.023	−0.015	3.62	−85.99	−86.18	0.006	3.71	−86.09
59	101	0.283		−0.007	0.011		0.309		0.045	−0.004	3.81	−83.71	−83.51	0.006	3.92	−83.79
60	102	0.300		−0.007	0.015		0.329		0.050	−0.007	3.80	−83.80	−83.56	0.021	3.96	−83.83
61	103	0.325		0.007	0.023		0.358		0.042	−0.019	3.68	−81.27	−80.85	0.060	3.86	−81.27
62	104	0.317		0.013	0.014		0.349		0.030	−0.013	3.69	−80.77	−80.34	0.060	3.87	−80.76
63	105	0.333		0.027	0.018		0.369		0.019	−0.022	3.61	−77.66	−77.34	0.070	3.81	−77.62
64	106	0.325		0.040	0.002		0.361		−0.002	−0.012	3.72	−76.52	−76.27	0.060	3.92	−76.46
65	107	0.317		0.047	−0.005		0.352		−0.014	−0.008	3.68	−72.86	−72.93	0.190	3.86	−72.82
66	108	0.300		0.053	−0.017		0.333		−0.027	0.002	3.71	−71.28			3.92	−71.18
67	109	0.300		0.067	−0.025		0.334		−0.046	0.004	3.45	−67.36			3.70	−67.21
68	110	0.300		0.080	−0.035		0.335		−0.063	0.009	3.19	−65.57			3.55	−65.28
69	111	0.300		0.093	−0.040		0.336		−0.079	0.009	2.82	−61.31			3.25	−60.92
70	112	0.300		0.107	−0.039		0.337		−0.096	0.004	2.83	−58.78			3.38	−58.24
71	113	−0.250		0.087	0.005		−0.258		−0.072	0.018	3.39	−53.14			3.76	−52.75
72	114	−0.242		0.087	0.015		−0.249		−0.074	0.009	3.08	−50.47			3.45	−50.05
73	115	−0.225		0.087	0.025		−0.231		−0.078	−0.001	2.53	−45.52			2.92	−45.05
74	116	−0.200		0.087	0.035		−0.205		−0.083	−0.012	2.10	−42.55			2.56	−41.97
75	117	−0.183		0.087	0.043		−0.187		−0.085	−0.020	1.32	−37.43			1.83	−36.75
76	118	−0.167		0.087	0.042		−0.171		−0.088	−0.021	0.81	−34.12			1.36	−33.37
77	119	−0.158		0.087	0.043		−0.161		−0.089	−0.023	−0.20	−28.85			0.38	−28.02
78	120	−0.150		0.080	0.037		−0.154		−0.082	−0.019	−0.75	−25.19			−0.25	−24.38
79	121	−0.150		0.080	0.036		−0.154		−0.082	−0.019	−1.78	−19.57			−1.28	−18.71
80	122	−0.142		0.067	0.028		−0.146		−0.068	−0.014	−2.14	−15.34			−1.77	−14.55
81	123	0.008		0.007	−0.004		0.008		−0.008	0.004	−4.86	−11.06			−4.86	−10.58
82	124	0.000		0.000	−0.001		0.000		0.000	0.001	−5.93	−7.17			−5.93	−6.64
83	125	−0.008		−0.007	0.001		−0.008		0.008	−0.001	−5.33	0.77			−5.33	1.36
84	126	0.000		−0.007	−0.001		0.000		0.008	0.001	−4.25	7.16			−4.25	7.82
85	127	0.008		−0.013	0.002		0.008		0.015	−0.002	−3.50	15.57			−3.48	16.31
86	128	0.000		−0.013	0.000		0.000		0.015	0.000	−2.32	22.39			−2.31	23.19
87	129	0.125		−0.053	−0.002		0.134		0.072	0.012	−0.41	32.27			−0.09	33.46
88	130	0.142	0.040	−0.053	0.011	0.016	0.153	−0.055	0.075	0.001	0.50	39.15			0.91	40.50
89	131	0.158		−0.073	0.007		0.170		0.102	0.010	1.15	48.07			1.76	49.70
90	132	0.183		−0.080	−0.007		0.199		0.115	0.030	1.63	54.83			2.54	56.82
91	133	0.200		−0.080	−0.005		0.218		0.118	0.030	1.59	63.35			2.53	65.46
92	134	0.217		−0.087	0.001		0.237		0.131	0.029	1.91	70.24			3.01	72.60
93	135	0.217		−0.080	0.004		0.236		0.122	0.023	1.81	78.98			2.75	81.26
94	136	0.233		−0.060	0.009		0.252		0.099	0.013	2.10	86.12			2.77	88.23
95	137	0.242		−0.053	0.018		0.262		0.093	0.002	2.05	95.18			2.65	97.31
96	138	0.250		−0.047	0.023		0.271		0.088	−0.004	2.24	102.50			2.86	104.74
97	139	0.258		−0.033	0.026		0.280		0.072	−0.012	2.06	111.68			2.60	113.94

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 42 (Mo)																
98	140	0.267		−0.013	0.025		0.291		0.050	−0.017	2.18	119.20			2.65	121.49
99	141	0.275		0.007	0.024		0.301		0.027	−0.022	1.80	128.43			2.25	130.79
100	142	0.275		0.013	0.025		0.302		0.020	−0.025	1.74	136.03			2.25	138.55
101	143	0.292		0.033	0.031		0.323		0.002	−0.037	1.06	145.19			1.83	148.08
102	144	0.300		0.040	0.037		0.333		−0.003	−0.046	0.80	152.83			1.86	156.12
Z = 43 (Tc)																
36	79	−0.242		0.093	0.032		−0.248		−0.081	−0.004	4.12	4.14			4.15	4.19
37	80	−0.233		0.093	0.038		−0.239		−0.083	−0.010	4.41	−3.93			4.42	−3.90
38	81	−0.225		0.100	0.048		−0.229		−0.093	−0.018	4.18	−14.12			4.23	−14.06
39	82	−0.208		0.093	0.044		−0.213		−0.088	−0.018	4.31	−21.25			4.33	−21.22
40	83	−0.217		0.100	0.050		−0.221		−0.094	−0.020	3.76	−30.65			3.80	−30.60
41	84	−0.217		0.100	0.049		−0.221		−0.094	−0.019	3.66	−36.95			3.68	−36.94
42	85	0.050		0.000	0.000		0.053		0.001	0.000	4.52	−43.89			4.52	−43.92
43	86	0.050		0.000	0.000		0.053		0.001	0.000	4.27	−49.02			4.27	−49.06
44	87	0.050		0.000	0.000		0.053		0.001	0.000	3.24	−56.54			3.23	−56.59
45	88	0.050		0.000	−0.001		0.053		0.001	0.001	2.76	−60.65			2.76	−60.72
46	89	0.050		0.000	0.000		0.053		0.001	0.000	1.62	−67.02			1.62	−67.10
47	90	0.050		−0.007	0.004		0.053		0.009	−0.004	0.84	−70.60			0.84	−70.70
48	91	0.050		0.000	0.001		0.053		0.001	−0.001	−0.39	−76.22	−75.99	0.200	−0.39	−76.33
49	92	0.050		0.007	−0.002		0.053		−0.007	0.002	−1.16	−79.00	−78.94	0.026	−1.16	−79.13
50	93	0.033		−0.007	0.002		0.035		0.009	−0.002	−2.45	−83.88	−83.61	0.004	−2.45	−84.03
51	94	0.050		−0.013	−0.002		0.053		0.017	0.003	−1.37	−84.06	−84.16	0.005	−1.37	−84.22
52	95	0.050		−0.007	0.000		0.053		0.009	0.000	−0.40	−85.93	−86.02	0.005	−0.40	−86.10
53	96	0.050		0.000	0.002		0.053		0.001	−0.002	0.70	−85.38	−85.82	0.006	0.70	−85.56
54	97	0.125		−0.027	0.007		0.134		0.040	−0.002	1.26	−86.95	−87.22	0.005	1.28	−87.12
55	98	0.150		−0.020	0.021		0.161		0.035	−0.017	2.05	−86.04	−86.43	0.004	2.08	−86.21
56	99	0.158		−0.013	0.022		0.170		0.028	−0.019	2.64	−86.90	−87.32	0.002	2.68	−87.07
57	100	0.175		−0.007	0.023		0.189		0.023	−0.020	3.15	−85.64	−86.02	0.002	3.19	−85.81
58	101	0.192		−0.007	0.020		0.207		0.026	−0.017	3.52	−86.09	−86.34	0.024	3.57	−86.25
59	102	0.250		−0.020	0.013		0.272		0.053	−0.003	3.72	−84.53	−84.57	0.009	3.80	−84.67
60	103	0.275		−0.013	0.015		0.300		0.051	−0.006	3.70	−84.75	−84.60	0.010	3.81	−84.86
61	104	0.300		0.000	0.013		0.329		0.041	−0.008	3.79	−82.73	−82.49	0.050	3.89	−82.84
62	105	0.292		0.007	0.011		0.320		0.030	−0.009	3.83	−82.32	−82.29	0.060	3.94	−82.42
63	106	0.308		0.020	0.010		0.340		0.019	−0.012	3.87	−79.80	−79.78	0.050	3.98	−79.89
64	107	0.292		0.027	0.000		0.322		0.004	−0.005	3.89	−78.86	−79.09	0.170	4.01	−78.93
65	108	0.292		0.033	−0.003		0.322		−0.003	−0.005	3.86	−75.89	−75.94	0.160	3.97	−75.96
66	109	−0.242		0.067	0.007		−0.250		−0.052	0.010	4.61	−73.69	−74.61	0.220	4.79	−73.69
67	110	−0.250		0.080	0.008		−0.258		−0.064	0.013	4.35	−70.46			4.57	−70.40
68	111	−0.250		0.080	0.004		−0.258		−0.064	0.017	4.02	−68.85			4.27	−68.73
69	112	−0.250		0.087	0.002		−0.258		−0.071	0.021	3.69	−65.21			3.99	−65.02
70	113	−0.250		0.093	0.010		−0.258		−0.078	0.016	3.42	−63.06			3.76	−62.80
71	114	−0.250		0.093	0.010		−0.258		−0.078	0.016	3.17	−58.89			3.51	−58.61
72	115	−0.242		0.093	0.020		−0.249		−0.081	0.006	2.87	−56.31			3.23	−55.98
73	116	−0.225		0.093	0.028		−0.231		−0.084	−0.002	2.36	−51.97			2.74	−51.59
74	117	−0.208		0.093	0.037		−0.213		−0.088	−0.011	1.97	−49.05			2.42	−48.57
75	118	−0.192		0.093	0.045		−0.196		−0.091	−0.020	1.15	−44.60			1.67	−44.02
76	119	−0.175		0.093	0.044		−0.179		−0.093	−0.021	0.63	−41.39			1.18	−40.73
77	120	−0.167		0.093	0.046		−0.170		−0.094	−0.023	−0.32	−36.69			0.26	−35.96
78	121	−0.158		0.087	0.039		−0.162		−0.089	−0.019	−0.91	−33.14			−0.39	−32.43
79	122	−0.158		0.087	0.038		−0.162		−0.089	−0.018	−1.89	−28.09			−1.37	−27.33
80	123	−0.150		0.073	0.030		−0.154		−0.074	−0.015	−2.27	−23.95			−1.88	−23.27
81	124	0.017		0.007	−0.003		0.018		−0.008	0.003	−4.99	−20.28			−4.99	−19.94
82	125	0.000		0.000	−0.001		0.000		0.000	0.001	−6.09	−16.50			−6.09	−16.10
83	126	−0.008		−0.007	−0.001		−0.008		0.008	0.001	−5.46	−9.13			−5.46	−8.67
84	127	0.000		−0.007	0.000		0.000		0.008	0.000	−4.38	−2.81			−4.38	−2.30
85	128	0.025		−0.020	−0.003		0.027		0.024	0.004	−3.57	5.08			−3.53	5.68
86	129	0.083		−0.047	−0.020		0.090		0.060	0.026	−2.13	12.09			−1.80	13.06

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 43 (Tc)																
87	130	0.125		−0.053	0.000		0.134		0.072	0.010	−0.59	21.03			−0.30	22.02
88	131	0.142	0.032	−0.053	0.011	0.018	0.153	−0.044	0.075	0.000	0.31	27.83			0.67	28.96
89	132	0.158		−0.067	0.009		0.170		0.094	0.006	0.96	36.18			1.45	37.52
90	133	0.183		−0.073	−0.003		0.199		0.106	0.024	1.56	42.99			2.25	44.61
91	134	0.200		−0.080	0.001		0.217		0.118	0.024	1.55	50.99			2.36	52.80
92	135	0.208		−0.080	0.000		0.226		0.120	0.026	1.74	57.69			2.62	59.65
93	136	0.217		−0.073	0.007		0.235		0.113	0.017	1.81	66.04			2.55	67.94
94	137	0.225		−0.060	0.012		0.243		0.098	0.009	2.08	73.12			2.68	74.97
95	138	0.233		−0.053	0.019		0.252		0.091	0.000	2.04	81.64			2.58	83.51
96	139	0.250		−0.047	0.027		0.271		0.088	−0.009	2.14	88.83			2.74	90.85
97	140	0.250		−0.033	0.028		0.271		0.071	−0.014	2.03	97.54			2.53	99.55
98	141	0.250		−0.020	0.029		0.271		0.055	−0.020	2.22	105.09			2.70	107.17
99	142	0.258		−0.007	0.030		0.281		0.041	−0.024	1.84	113.79			2.32	115.96
100	143	0.267		0.007	0.029		0.292		0.026	−0.027	1.76	121.32			2.27	123.62
101	144	0.275		0.020	0.036		0.303		0.013	−0.038	1.17	130.06			1.90	132.68
102	145	0.275		0.027	0.042		0.303		0.006	−0.046	1.01	137.76			1.99	140.74
103	146	0.275		0.040	0.034		0.305		−0.011	−0.043	0.83	147.14			1.71	150.12
104	147	0.258		0.040	0.029		0.285		−0.016	−0.038	1.44	155.86			2.18	158.81
Z = 44 (Ru)																
37	81	−0.225		0.087	0.034		−0.231		−0.078	−0.009	4.02	4.83			4.05	4.94
38	82	−0.217		0.093	0.044		−0.222		−0.087	−0.017	3.80	−6.24			3.86	−6.11
39	83	0.050		0.000	0.022		0.053		0.002	−0.022	5.23	−12.24			5.24	−12.17
40	84	0.050		0.000	−0.002		0.053		0.001	0.002	4.74	−22.44			4.74	−22.39
41	85	0.050		−0.007	−0.004		0.053		0.009	0.004	4.64	−28.92			4.64	−28.89
42	86	0.050		0.000	−0.001		0.053		0.001	0.001	3.77	−38.44			3.77	−38.43
43	87	0.050		−0.007	0.001		0.053		0.009	−0.001	3.52	−44.10			3.52	−44.10
44	88	0.050		0.000	−0.003		0.053		0.001	0.003	2.49	−52.79			2.49	−52.80
45	89	0.050		−0.007	−0.003		0.053		0.009	0.003	1.98	−57.10			1.98	−57.13
46	90	0.050		0.000	−0.004		0.053		0.001	0.004	0.85	−64.29			0.85	−64.34
47	91	0.050		−0.007	0.003		0.053		0.009	−0.003	0.08	−68.01			0.08	−68.08
48	92	0.050		0.000	0.000		0.053		0.001	0.000	−1.20	−74.48			−1.20	−74.57
49	93	0.050		0.007	−0.002		0.053		−0.007	0.002	−1.95	−77.39	−77.27	0.090	−1.95	−77.51
50	94	0.033		−0.007	0.000		0.035		0.009	0.000	−3.24	−83.08	−82.57	0.013	−3.24	−83.21
51	95	0.050		−0.013	0.007		0.053		0.017	−0.006	−2.08	−83.32	−83.45	0.012	−2.08	−83.47
52	96	0.050		−0.007	0.000		0.053		0.009	0.000	−1.11	−85.97	−86.07	0.008	−1.11	−86.14
53	97	0.050		0.000	0.002		0.053		0.001	−0.002	0.01	−85.54	−86.11	0.008	0.01	−85.72
54	98	0.108		−0.027	0.006		0.115		0.038	−0.002	0.57	−87.88	−88.22	0.006	0.59	−88.05
55	99	0.142		−0.020	0.021		0.152		0.034	−0.017	1.36	−87.11	−87.62	0.002	1.39	−87.29
56	100	0.150		−0.013	0.023		0.161		0.027	−0.020	2.00	−88.68	−89.22	0.002	2.04	−88.85
57	101	0.167		−0.007	0.024		0.180		0.022	−0.022	2.54	−87.52	−87.95	0.002	2.58	−87.70
58	102	0.175		0.000	0.021		0.189		0.015	−0.020	2.98	−88.63	−89.10	0.002	3.03	−88.81
59	103	0.217		−0.007	0.019		0.235		0.030	−0.015	3.31	−87.06	−87.26	0.002	3.37	−87.24
60	104	0.233		−0.013	0.012		0.253		0.041	−0.006	3.49	−87.82	−88.09	0.004	3.57	−87.97
61	105	0.267		−0.013	0.013		0.291		0.049	−0.005	3.70	−85.79	−85.93	0.004	3.80	−85.94
62	106	0.258		0.000	0.007		0.281		0.030	−0.004	3.83	−86.01	−86.33	0.008	3.93	−86.15
63	107	0.275		0.007	0.008		0.301		0.025	−0.006	3.90	−83.58	−83.91	0.140	4.00	−83.72
64	108	0.258		0.020	−0.005		0.283		0.004	0.002	3.99	−83.26	−83.65	0.150	4.09	−83.39
65	109	0.267		0.027	−0.010		0.293		−0.003	0.004	3.94	−80.43	−80.85	0.100	4.04	−80.55
66	110	−0.242		0.060	0.005		−0.250		−0.044	0.010	4.20	−79.41			4.36	−79.47
67	111	−0.250		0.073	0.007		−0.258		−0.057	0.012	3.93	−76.30			4.12	−76.31
68	112	−0.250		0.080	0.005		−0.258		−0.064	0.016	3.60	−75.35			3.86	−75.29
69	113	−0.250		0.087	0.002		−0.258		−0.071	0.021	3.28	−71.81			3.57	−71.70
70	114	−0.250		0.087	0.008		−0.258		−0.072	0.016	3.01	−70.32			3.31	−70.17
71	115	−0.250		0.087	0.008		−0.258		−0.072	0.016	2.77	−66.24			3.08	−66.07
72	116	−0.242		0.087	0.016		−0.249		−0.074	0.008	2.49	−64.29			2.82	−64.08
73	117	−0.225		0.087	0.027		−0.231		−0.078	−0.003	1.99	−60.04			2.33	−59.79
74	118	−0.200		0.087	0.035		−0.205		−0.083	−0.012	1.55	−57.81			1.94	−57.47

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 44$ (Ru)																
75	119	−0.183		0.093	0.045		−0.187		−0.092	−0.021	0.78	−53.41			1.27	−52.94
76	120	−0.167		0.087	0.042		−0.171		−0.088	−0.021	0.24	−50.84			0.72	−50.35
77	121	−0.158		0.093	0.046		−0.161		−0.096	−0.024	−0.79	−46.31			−0.23	−45.70
78	122	−0.150		0.080	0.038		−0.154		−0.082	−0.020	−1.36	−43.37			−0.91	−42.83
79	123	−0.142		0.080	0.036		−0.145		−0.083	−0.019	−2.39	−38.45			−1.95	−37.88
80	124	0.000		0.000	0.000		0.000		0.000	0.000	−3.65	−35.80			−3.65	−35.63
81	125	0.008		0.007	−0.004		0.008		−0.008	0.004	−5.79	−31.63			−5.79	−31.40
82	126	0.000		0.000	−0.001		0.000		0.000	0.001	−6.88	−28.43			−6.88	−28.16
83	127	−0.008		−0.007	0.001		−0.008		0.008	−0.001	−6.19	−21.08			−6.19	−20.75
84	128	0.000		0.000	−0.001		0.000		0.000	0.001	−5.09	−15.33			−5.09	−14.96
85	129	0.017		−0.013	0.001		0.018		0.016	−0.001	−4.27	−7.50			−4.25	−7.05
86	130	0.008		−0.007	−0.001		0.008		0.008	0.001	−3.11	−1.35			−3.11	−0.86
87	131	0.117		−0.053	0.000		0.126		0.071	0.009	−1.36	7.72			−1.09	8.56
88	132	0.133	0.032	−0.047	0.009	0.014	0.143	−0.044	0.066	0.001	−0.20	14.21			0.09	15.12
89	133	0.150		−0.067	0.011		0.161		0.093	0.004	0.44	22.49			0.90	23.65
90	134	0.175		−0.073	−0.003		0.190		0.104	0.023	1.24	28.94			1.89	30.35
91	135	0.192		−0.080	0.000		0.209		0.117	0.024	1.36	37.01			2.14	38.61
92	136	0.208		−0.080	0.004		0.226		0.120	0.022	1.65	43.25			2.49	44.99
93	137	0.217		−0.073	0.011		0.235		0.113	0.013	1.73	51.56			2.45	53.26
94	138	0.225		−0.060	0.015		0.243		0.098	0.006	2.03	58.11			2.62	59.77
95	139	0.233		−0.053	0.022		0.252		0.091	−0.003	1.98	66.58			2.54	68.28
96	140	0.242		−0.047	0.027		0.262		0.086	−0.009	2.15	73.29			2.74	75.10
97	141	0.250		−0.040	0.032		0.271		0.080	−0.016	2.01	81.92			2.60	83.82
98	142	0.250		−0.027	0.032		0.271		0.064	−0.020	2.18	88.92			2.74	90.87
99	143	0.258		−0.007	0.031		0.281		0.041	−0.025	1.90	97.67			2.39	99.65
100	144	0.258		0.000	0.032		0.282		0.033	−0.028	1.89	104.75			2.44	106.88
101	145	0.267		0.013	0.038		0.293		0.020	−0.038	1.43	113.57			2.14	115.96
102	146	0.275		0.027	0.041		0.303		0.006	−0.045	1.28	120.76			2.23	123.49
103	147	0.267		0.033	0.035		0.295		−0.004	−0.041	1.17	130.18			1.99	132.87
104	148	0.258		0.040	0.027		0.285		−0.016	−0.036	1.62	138.22			2.31	140.89
105	149	0.250		0.047	0.016		0.276		−0.028	−0.027	1.71	148.07			2.25	150.69
106	150	0.250		0.060	0.000		0.277		−0.045	−0.015	1.92	156.12			2.46	158.84
$Z = 45$ (Rh)																
38	83	−0.225		0.100	0.049		−0.229		−0.093	−0.018	3.33	4.91			3.38	5.10
39	84	0.050		0.000	−0.002		0.053		0.001	0.002	4.34	−2.38			4.33	−2.26
40	85	0.050		0.000	−0.002		0.053		0.001	0.002	3.89	−12.71			3.88	−12.61
41	86	0.050		−0.007	−0.005		0.053		0.009	0.005	3.90	−19.93			3.89	−19.84
42	87	0.050		−0.007	−0.001		0.053		0.009	0.001	3.00	−29.66			3.00	−29.59
43	88	0.050		−0.007	−0.001		0.053		0.009	0.001	2.78	−36.11			2.78	−36.06
44	89	0.050		−0.007	−0.001		0.053		0.009	0.001	1.71	−44.99			1.71	−44.97
45	90	0.050		−0.007	−0.012		0.053		0.009	0.012	1.24	−50.43			1.24	−50.42
46	91	0.050		−0.007	−0.011		0.053		0.009	0.011	0.09	−58.13			0.09	−58.15
47	92	0.050		−0.007	0.004		0.053		0.009	−0.004	−0.60	−62.58			−0.60	−62.62
48	93	0.050		0.000	0.000		0.053		0.001	0.000	−1.86	−69.20			−1.86	−69.26
49	94	0.050		0.007	−0.003		0.053		−0.007	0.003	−2.59	−72.87	−72.94	0.450	−2.59	−72.95
50	95	0.033		−0.007	0.001		0.035		0.009	−0.001	−3.86	−78.68	−78.34	0.150	−3.86	−78.78
51	96	0.050		−0.013	−0.003		0.053		0.017	0.004	−2.82	−79.82	−79.63	0.013	−2.82	−79.95
52	97	0.050		−0.007	−0.001		0.053		0.009	0.001	−1.93	−82.70	−82.59	0.040	−1.93	−82.85
53	98	0.083		−0.027	0.002		0.089		0.036	0.001	−1.00	−83.22	−83.17	0.012	−0.99	−83.38
54	99	0.100		−0.027	0.004		0.107		0.037	0.000	−0.06	−85.33	−85.52	0.010	−0.05	−85.49
55	100	0.133		−0.020	0.016		0.142		0.032	−0.012	0.69	−85.33	−85.59	0.020	0.71	−85.52
56	101	0.142		−0.013	0.019		0.152		0.025	−0.016	1.38	−86.99	−87.41	0.017	1.41	−87.17
57	102	0.158		0.000	0.023		0.170		0.012	−0.022	1.96	−86.53	−86.83	0.016	1.98	−86.73
58	103	0.167		0.007	0.019		0.180		0.005	−0.020	2.44	−87.73	−88.02	0.003	2.47	−87.93
59	104	0.192		0.000	0.016		0.208		0.017	−0.015	2.97	−86.68	−86.95	0.003	3.00	−86.90
60	105	0.183		0.013	0.010		0.198		−0.001	−0.012	3.37	−87.35	−87.85	0.005	3.40	−87.57
61	106	0.225		−0.007	0.009		0.244		0.031	−0.005	3.44	−86.18	−86.36	0.008	3.48	−86.39

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 45 (Rh)																
62	107	0.208		0.007	0.002		0.226		0.010	−0.002	3.74	−86.33	−86.86	0.012	3.78	−86.56
63	108	0.233		0.007	−0.002		0.254		0.015	0.002	3.69	−84.72	−85.00	0.120	3.74	−84.94
64	109	−0.233		0.047	0.009		−0.241		−0.032	0.002	4.29	−84.01	−85.01	0.015	4.38	−84.19
65	110	−0.242		0.060	0.011		−0.250		−0.044	0.005	4.16	−81.95	−82.95	0.220	4.26	−82.10
66	111	−0.242		0.067	0.010		−0.250		−0.052	0.007	3.86	−81.60			4.00	−81.71
67	112	−0.250		0.073	0.008		−0.258		−0.057	0.011	3.60	−79.15			3.76	−79.24
68	113	−0.250		0.080	0.007		−0.258		−0.064	0.014	3.28	−78.31			3.48	−78.34
69	114	−0.250		0.087	0.005		−0.258		−0.072	0.018	2.98	−75.40			3.22	−75.39
70	115	−0.250		0.087	0.010		−0.258		−0.072	0.014	2.70	−74.03			2.96	−73.98
71	116	−0.250		0.087	0.010		−0.258		−0.072	0.014	2.49	−70.57			2.74	−70.51
72	117	−0.233		0.087	0.019		−0.240		−0.076	0.005	2.17	−68.76			2.45	−68.65
73	118	−0.217		0.087	0.028		−0.223		−0.079	−0.004	1.72	−65.10			2.02	−64.96
74	119	−0.200		0.087	0.036		−0.205		−0.083	−0.013	1.29	−62.94			1.65	−62.72
75	120	−0.183		0.093	0.045		−0.187		−0.092	−0.021	0.51	−59.19			0.95	−58.85
76	121	−0.175		0.093	0.046		−0.178		−0.093	−0.022	−0.10	−56.79			0.39	−56.38
77	122	−0.158		0.093	0.046		−0.161		−0.096	−0.024	−1.09	−52.83			−0.58	−52.37
78	123	−0.150		0.080	0.038		−0.154		−0.082	−0.020	−1.74	−50.05			−1.33	−49.65
79	124	−0.142		0.080	0.036		−0.145		−0.083	−0.019	−2.74	−45.71			−2.33	−45.28
80	125	0.000		0.000	−0.001		0.000		0.000	0.001	−4.01	−43.16			−4.01	−43.09
81	126	0.017		0.007	−0.005		0.018		−0.008	0.005	−6.12	−39.55			−6.11	−39.44
82	127	0.000		0.000	−0.001		0.000		0.000	0.001	−7.27	−36.50			−7.27	−36.35
83	128	−0.008		0.007	−0.002		−0.008		−0.008	0.002	−6.47	−29.62			−6.47	−29.42
84	129	0.000		0.000	−0.001		0.000		0.000	0.001	−5.44	−24.02			−5.44	−23.77
85	130	0.017		−0.013	0.001		0.018		0.016	−0.001	−4.60	−16.76			−4.59	−16.44
86	131	0.083		−0.040	−0.015		0.089		0.051	0.020	−2.93	−10.17			−2.74	−9.61
87	132	0.117		−0.053	0.004		0.125		0.071	0.005	−1.62	−2.10			−1.37	−1.44
88	133	0.133		−0.047	0.017		0.142		0.066	−0.008	−0.52	4.26			−0.26	4.99
89	134	0.150		−0.060	0.014		0.161		0.084	−0.001	0.18	12.03			0.55	12.94
90	135	0.167		−0.067	0.002		0.180		0.095	0.015	0.93	18.37			1.42	19.46
91	136	0.192		−0.080	0.006		0.208		0.117	0.017	1.25	26.07			1.93	27.42
92	137	0.200		−0.080	0.006		0.217		0.118	0.018	1.48	32.20			2.22	33.68
93	138	0.208		−0.073	0.012		0.225		0.111	0.011	1.48	39.88			2.12	41.33
94	139	0.217		−0.060	0.018		0.234		0.096	0.001	1.86	46.47			2.40	47.89
95	140	0.225	0.010	−0.053	0.016	0.023	0.243	−0.014	0.089	0.002	1.84	54.41			2.32	55.85
96	141	0.233		−0.053	0.030		0.251		0.092	−0.011	1.95	61.01			2.56	62.66
97	142	0.242		−0.040	0.034		0.262		0.078	−0.019	1.84	69.14			2.40	70.82
98	143	0.242		−0.033	0.036		0.262		0.069	−0.023	2.01	76.08			2.59	77.87
99	144	0.250		−0.020	0.036		0.271		0.055	−0.027	1.66	84.24			2.21	86.08
100	145	0.267		0.000	0.033		0.292		0.035	−0.029	1.70	91.33			2.24	93.24
101	146	0.267		0.013	0.038		0.293		0.020	−0.038	1.32	99.71			2.00	101.85
102	147	0.275		0.027	0.041		0.303		0.006	−0.045	1.26	106.96			2.14	109.39
103	148	0.267		0.033	0.034		0.295		−0.004	−0.040	1.16	115.86			1.89	118.24
104	149	0.250		0.040	0.023		0.276		−0.018	−0.032	1.67	123.93			2.24	126.25
105	150	0.250		0.053	0.009		0.276		−0.036	−0.022	1.62	133.12			2.09	135.44
106	151	0.242		0.060	−0.002		0.267		−0.047	−0.013	1.84	141.15			2.32	143.58
107	152	0.242		0.073	−0.004		0.269		−0.063	−0.015	1.55	150.34			2.19	153.03
108	153	0.242		0.087	−0.008		0.270		−0.080	−0.014	1.51	158.34			2.38	161.36
Z = 46 (Pd)																
40	86	0.050		0.000	0.000		0.053		0.001	0.000	3.13	−4.96			3.12	−4.79
41	87	0.050		−0.007	−0.004		0.053		0.009	0.004	3.13	−12.35			3.13	−12.20
42	88	0.050		0.000	0.000		0.053		0.001	0.000	2.26	−22.89			2.26	−22.76
43	89	0.050		0.000	0.001		0.053		0.001	−0.001	2.04	−29.51			2.04	−29.40
44	90	0.050		0.000	0.000		0.053		0.001	0.000	0.96	−39.23			0.96	−39.15
45	91	0.050		0.000	−0.001		0.053		0.001	0.001	0.48	−45.16			0.48	−45.10
46	92	0.050		0.000	0.000		0.053		0.001	0.000	−0.70	−54.03			−0.70	−54.00
47	93	0.050		0.000	0.003		0.053		0.001	−0.003	−1.43	−58.68			−1.44	−58.67
48	94	0.042		0.007	0.000		0.045		−0.008	0.000	−2.87	−66.27			−2.87	−66.29

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 46 (Pd)																
49	95	0.050		0.007	−0.002		0.053		−0.007	0.002	−3.48	−69.98			−3.48	−70.02
50	96	0.025		0.013	0.000		0.027		−0.015	0.000	−4.87	−76.69	−76.18	0.150	−4.87	−76.76
51	97	0.050		−0.007	−0.002		0.053		0.009	0.002	−3.69	−77.84	−77.80	0.300	−3.69	−77.93
52	98	0.042		−0.007	0.000		0.045		0.009	0.000	−2.86	−81.55	−81.30	0.022	−2.86	−81.66
53	99	0.050		0.007	0.002		0.053		−0.007	−0.002	−1.55	−81.83	−82.19	0.016	−1.55	−81.97
54	100	0.083		−0.013	0.004		0.088		0.019	−0.003	−0.81	−84.88	−85.23	0.011	−0.80	−85.04
55	101	0.125		−0.020	0.017		0.134		0.032	−0.014	−0.06	−85.03	−85.43	0.018	−0.04	−85.19
56	102	0.133		−0.007	0.017		0.143		0.017	−0.015	0.63	−87.43	−87.93	0.003	0.65	−87.61
57	103	0.150		0.000	0.020		0.162		0.011	−0.019	1.29	−87.01	−87.48	0.003	1.32	−87.20
58	104	0.150		0.007	0.016		0.162		0.002	−0.017	1.83	−88.89	−89.39	0.005	1.85	−89.09
59	105	0.158		0.020	0.007		0.171		−0.013	−0.010	2.39	−87.94	−88.42	0.005	2.41	−88.17
60	106	0.158		0.020	0.003		0.171		−0.013	−0.006	2.80	−89.30	−89.91	0.005	2.83	−89.54
61	107	0.183		0.013	0.000		0.198		−0.002	−0.002	3.08	−88.05	−88.37	0.006	3.11	−88.29
62	108	0.175		0.020	−0.003		0.190		−0.011	0.000	3.34	−88.95	−89.52	0.004	3.38	−89.19
63	109	0.208		0.013	−0.006		0.226		0.002	0.004	3.36	−87.39	−87.61	0.004	3.40	−87.63
64	110	0.200		0.027	−0.013		0.218		−0.017	0.008	3.42	−87.91	−88.35	0.015	3.48	−88.14
65	111	−0.242		0.047	0.007		−0.250		−0.030	0.004	3.78	−85.46	−86.03	0.040	3.87	−85.67
66	112	−0.233		0.053	0.004		−0.241		−0.038	0.008	3.48	−85.80	−86.33	0.019	3.59	−85.98
67	113	−0.242		0.060	0.002		−0.250		−0.044	0.013	3.23	−83.45	−83.68	0.150	3.36	−83.61
68	114	−0.242		0.067	0.002		−0.250		−0.051	0.015	2.91	−83.28	−83.46	0.029	3.08	−83.39
69	115	−0.250		0.073	−0.001		−0.258		−0.056	0.019	2.68	−80.41			2.87	−80.49
70	116	−0.242		0.073	0.004		−0.250		−0.058	0.015	2.34	−79.75	−80.14	0.150	2.55	−79.80
71	117	−0.250		0.080	0.007		−0.258		−0.064	0.014	2.17	−76.35			2.40	−76.37
72	118	−0.233		0.073	0.013		−0.240		−0.060	0.006	1.85	−75.20	−75.64	0.220	2.06	−75.22
73	119	−0.217		0.080	0.024		−0.223		−0.072	−0.003	1.36	−71.67			1.61	−71.64
74	120	−0.183		0.080	0.031		−0.188		−0.077	−0.011	0.78	−70.31			1.07	−70.21
75	121	−0.158		0.080	0.037		−0.162		−0.081	−0.019	0.04	−66.60			0.36	−66.45
76	122	−0.133		0.067	0.032		−0.137		−0.070	−0.019	−0.58	−64.83			−0.32	−64.72
77	123	−0.125		0.067	0.033		−0.129		−0.070	−0.020	−1.46	−60.85			−1.18	−60.70
78	124	0.000		0.000	0.000		0.000		0.000	0.000	−2.46	−59.04			−2.46	−59.13
79	125	0.000		−0.007	−0.002		0.000		0.008	0.002	−3.84	−55.16			−3.84	−55.22
80	126	0.000		0.000	−0.001		0.000		0.000	0.001	−5.26	−53.37			−5.26	−53.40
81	127	0.017		0.007	−0.004		0.018		−0.008	0.004	−6.98	−49.45			−6.97	−49.44
82	128	0.000		0.000	−0.002		0.000		0.000	0.002	−7.97	−46.84			−7.97	−46.79
83	129	−0.008		0.007	−0.002		−0.008		−0.008	0.002	−7.36	−40.23			−7.36	−40.13
84	130	0.000		0.000	−0.001		0.000		0.000	0.001	−6.32	−35.20			−6.32	−35.07
85	131	0.008		−0.007	0.002		0.008		0.008	−0.002	−5.39	−27.93			−5.39	−27.74
86	132	0.008		−0.007	−0.001		0.008		0.008	0.001	−4.21	−22.40			−4.21	−22.17
87	133	0.108		−0.047	0.000		0.116		0.062	0.007	−2.42	−13.92			−2.22	−13.44
88	134	0.125	0.013	−0.047	0.009	0.015	0.134	−0.018	0.065	−0.001	−1.18	−7.99			−0.95	−7.43
89	135	0.150		−0.053	0.027		0.160		0.076	−0.016	−0.31	−0.12			0.06	0.65
90	136	0.158		−0.067	0.014		0.170		0.094	0.001	0.38	5.60			0.84	6.51
91	137	0.183		−0.080	0.005		0.198		0.115	0.017	0.89	13.43			1.55	14.60
92	138	0.200		−0.080	0.007		0.217		0.118	0.017	1.23	19.12			1.95	20.42
93	139	0.208		−0.073	0.014		0.225		0.111	0.009	1.25	26.76			1.88	28.04
94	140	0.208		−0.067	0.019		0.224		0.103	0.002	1.53	32.69			2.13	34.01
95	141	0.225		−0.060	0.027		0.243		0.099	−0.007	1.60	40.67			2.19	42.05
96	142	0.233		−0.053	0.032		0.251		0.092	−0.013	1.81	46.84			2.42	48.31
97	143	0.242		−0.040	0.034		0.262		0.078	−0.019	1.74	54.95			2.30	56.46
98	144	0.242		−0.033	0.036		0.262		0.069	−0.023	1.93	61.39			2.51	62.98
99	145	0.250		−0.020	0.036		0.271		0.055	−0.027	1.66	69.58			2.21	71.22
100	146	0.258		−0.007	0.035		0.281		0.041	−0.029	1.74	76.17			2.29	77.90
101	147	0.267		0.013	0.036		0.293		0.020	−0.036	1.47	84.62			2.10	86.52
102	148	0.267		0.020	0.038		0.294		0.012	−0.040	1.47	91.41			2.20	93.49
103	149	0.267		0.033	0.031		0.295		−0.005	−0.038	1.35	100.25			2.00	102.35
104	150	0.250		0.040	0.021		0.276		−0.019	−0.030	1.74	107.69			2.27	109.75
105	151	0.250		0.053	0.006		0.276		−0.036	−0.019	1.70	116.86			2.15	118.93

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 46 (Pd)																
106	152	0.233		0.060	−0.003		0.257		−0.049	−0.012	1.94	124.40			2.41	126.59
107	153	0.233		0.073	−0.006		0.258		−0.065	−0.012	1.66	133.57			2.29	136.01
108	154	0.233		0.087	−0.011		0.259		−0.082	−0.011	1.59	141.03			2.45	143.81
109	155	0.233		0.093	−0.019		0.259		−0.091	−0.005	1.12	150.23			2.09	153.22
110	156	0.225		0.100	−0.026		0.251		−0.101	0.001	0.90	157.78			2.09	161.10
Z = 47 (Ag)																
41	88	0.050		−0.007	0.000		0.053		0.009	0.000	2.03	−2.49			2.03	−2.26
42	89	0.050		−0.007	0.007		0.053		0.010	−0.006	1.12	−13.22			1.12	−13.01
43	90	0.050		−0.007	0.018		0.053		0.010	−0.017	0.91	−20.66			0.91	−20.47
44	91	0.050		−0.007	0.018		0.053		0.010	−0.017	−0.17	−30.54			−0.17	−30.38
45	92	0.050	0.011	−0.007	0.001	−0.001	0.053	−0.015	0.009	0.000	−0.57	−37.20			−0.58	−37.08
46	93	0.050		−0.007	0.000		0.053		0.009	0.000	−1.78	−46.25			−1.78	−46.15
47	94	0.050		−0.007	0.003		0.053		0.009	−0.003	−2.52	−52.02			−2.52	−51.95
48	95	0.050		−0.007	0.000		0.053		0.009	0.000	−3.82	−59.94			−3.82	−59.91
49	96	0.050		0.000	−0.002		0.053		0.001	0.002	−4.55	−64.56			−4.56	−64.55
50	97	0.042		−0.007	0.000		0.045		0.009	0.000	−5.67	−71.14			−5.67	−71.16
51	98	0.050		−0.013	−0.004		0.053		0.017	0.005	−4.81	−73.37			−4.81	−73.42
52	99	0.050		−0.007	−0.001		0.053		0.009	0.001	−3.84	−77.08	−76.76	0.150	−3.84	−77.16
53	100	0.058		−0.007	0.002		0.062		0.010	−0.001	−2.72	−78.31	−78.18	0.090	−2.72	−78.42
54	101	0.075		−0.013	0.007		0.080		0.018	−0.006	−1.82	−81.33	−81.19	0.120	−1.81	−81.46
55	102	0.117		−0.013	0.014		0.125		0.022	−0.012	−1.12	−82.28	−82.09	0.050	−1.12	−82.43
56	103	0.125		−0.007	0.015		0.134		0.016	−0.014	−0.28	−84.66	−84.79	0.017	−0.28	−84.83
57	104	0.142		0.007	0.016		0.153		0.001	−0.017	0.50	−84.85	−85.11	0.006	0.51	−85.04
58	105	0.142		0.007	0.014		0.153		0.001	−0.015	1.07	−86.82	−87.08	0.009	1.09	−87.03
59	106	0.150		0.020	0.006		0.162		−0.014	−0.009	1.68	−86.54	−86.94	0.005	1.69	−86.77
60	107	0.150		0.020	0.003		0.162		−0.014	−0.006	2.20	−87.92	−88.41	0.006	2.22	−88.16
61	108	0.150		0.013	0.001		0.162		−0.006	−0.003	2.63	−87.21	−87.61	0.006	2.64	−87.47
62	109	0.150		0.027	−0.004		0.162		−0.023	0.000	2.91	−88.21	−88.72	0.003	2.94	−88.47
63	110	0.158		0.027	−0.007		0.171		−0.023	0.003	3.12	−87.15	−87.46	0.003	3.14	−87.42
64	111	0.158		0.027	−0.010		0.171		−0.023	0.005	3.18	−87.79	−88.22	0.003	3.22	−88.06
65	112	−0.242		0.047	0.009		−0.250		−0.030	0.003	3.40	−86.17	−86.62	0.017	3.46	−86.42
66	113	−0.242		0.053	0.007		−0.250		−0.037	0.006	3.15	−86.56	−87.04	0.020	3.24	−86.78
67	114	−0.242		0.060	0.004		−0.250		−0.044	0.011	2.89	−84.89	−84.96	0.070	2.99	−85.10
68	115	−0.242		0.067	0.003		−0.250		−0.051	0.014	2.57	−84.82	−84.95	0.070	2.70	−85.00
69	116	−0.250		0.073	0.001		−0.258		−0.056	0.018	2.38	−82.57	−82.76	0.110	2.53	−82.73
70	117	−0.242		0.073	0.005		−0.250		−0.058	0.014	2.03	−82.03	−82.25	0.050	2.20	−82.16
71	118	−0.250		0.073	0.006		−0.258		−0.057	0.013	1.92	−79.21	−79.64	0.100	2.09	−79.35
72	119	−0.225		0.073	0.013		−0.232		−0.062	0.006	1.44	−78.31	−78.59	0.070	1.62	−78.42
73	120	0.142		0.027	−0.006		0.153		−0.024	0.002	1.18	−75.19	−75.77	0.100	1.23	−75.42
74	121	0.125		0.027	−0.005		0.135		−0.026	0.001	0.59	−73.94	−74.55	0.190	0.63	−74.16
75	122	0.125		0.033	−0.007		0.135		−0.034	0.002	−0.05	−70.75			0.01	−70.94
76	123	−0.100		0.047	0.021		−0.104		−0.050	−0.014	−1.23	−69.64			−1.11	−69.74
77	124	−0.100		0.053	0.025		−0.103		−0.057	−0.017	−2.15	−66.32			−1.99	−66.36
78	125	0.000		0.000	0.000		0.000		0.000	0.000	−3.45	−64.89			−3.45	−65.07
79	126	0.008		−0.007	−0.001		0.008		0.008	0.001	−4.71	−61.50			−4.70	−61.65
80	127	0.000		0.000	−0.001		0.000		0.000	0.001	−6.00	−59.66			−6.00	−59.78
81	128	0.017		0.007	−0.001		0.018		−0.008	0.001	−7.69	−56.31			−7.69	−56.40
82	129	0.000		0.000	−0.001		0.000		0.000	0.001	−8.72	−53.81			−8.72	−53.87
83	130	−0.008		0.007	−0.003		−0.008		−0.008	0.003	−8.06	−47.74			−8.06	−47.75
84	131	0.000		−0.007	−0.001		0.000		0.008	0.001	−7.00	−42.78			−7.00	−42.75
85	132	0.017		−0.013	0.003		0.018		0.016	−0.003	−6.05	−36.06			−6.04	−35.98
86	133	0.017		−0.013	−0.001		0.018		0.016	0.001	−4.91	−30.64			−4.89	−30.52
87	134	0.108		−0.040	−0.002		0.116		0.054	0.008	−2.94	−22.56			−2.80	−22.26
88	135	0.117		−0.040	0.005		0.125		0.055	0.002	−1.98	−16.97			−1.82	−16.61
89	136	0.142		−0.047	0.027		0.152		0.067	−0.018	−0.88	−9.43			−0.58	−8.87
90	137	0.150		−0.047	0.018		0.161		0.068	−0.008	−0.24	−3.84			0.02	−3.26
91	138	0.175		−0.073	0.000		0.190		0.104	0.019	0.54	3.71			1.07	4.61

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 47$ (Ag)																
92	139	0.200		−0.080	0.010		0.217		0.118	0.014	1.01	9.47			1.66	10.55
93	140	0.208		−0.073	0.017		0.225		0.111	0.006	1.04	16.57			1.62	17.64
94	141	0.208		−0.067	0.021		0.224		0.103	0.000	1.28	22.41			1.84	23.53
95	142	0.225		−0.060	0.030		0.242		0.099	−0.010	1.40	29.90			1.97	31.09
96	143	0.233		−0.053	0.034		0.251		0.092	−0.015	1.64	36.04			2.23	37.32
97	144	0.242		−0.047	0.040		0.261		0.087	−0.023	1.57	43.62			2.20	45.01
98	145	0.242		−0.033	0.037		0.262		0.070	−0.024	1.75	50.00			2.30	51.38
99	146	0.242		−0.027	0.038		0.262		0.062	−0.027	1.52	57.69			2.07	59.16
100	147	0.242		−0.013	0.036		0.263		0.045	−0.029	1.57	64.22			2.09	65.72
101	148	0.267		0.013	0.034		0.293		0.019	−0.034	1.35	72.20			1.90	73.81
102	149	0.267		0.020	0.034		0.293		0.011	−0.036	1.38	78.97			1.98	80.72
103	150	0.258		0.033	0.028		0.284		−0.007	−0.035	1.21	87.26			1.75	89.04
104	151	0.250		0.040	0.018		0.275		−0.019	−0.027	1.50	94.56			1.95	96.32
105	152	0.233		0.047	0.008		0.256		−0.032	−0.019	1.53	103.29			1.90	105.07
106	153	0.225		0.053	−0.004		0.248		−0.043	−0.008	1.71	110.72			2.07	112.59
107	154	0.225		0.067	−0.007		0.249		−0.060	−0.009	1.42	119.38			1.92	121.48
108	155	0.225		0.080	−0.012		0.249		−0.076	−0.007	1.30	126.76			1.99	129.15
109	156	0.217		0.087	−0.016		0.241		−0.086	−0.005	0.83	135.48			1.64	138.07
110	157	0.208		0.087	−0.024		0.230		−0.089	0.004	0.59	142.97			1.47	145.74
111	158	0.208		0.100	−0.033		0.231		−0.105	0.010	−0.14	151.65			1.08	154.85
112	159	0.200		0.107	−0.041		0.222		−0.116	0.017	−0.48	159.27			1.05	162.90
113	160	0.192		0.107	−0.034		0.213		−0.116	0.011	−0.91	168.47			0.54	172.11
$Z = 48$ (Cd)																
42	90	0.050		0.000	−0.003		0.053		0.001	0.003	0.19	−5.41			0.19	−5.11
43	91	0.050		0.000	−0.002		0.053		0.001	0.002	−0.04	−13.00			−0.04	−12.74
44	92	0.050		0.000	−0.003		0.053		0.001	0.003	−1.13	−23.71			−1.13	−23.48
45	93	0.050		0.000	−0.003		0.053		0.001	0.003	−1.61	−30.60			−1.61	−30.41
46	94	0.050		0.000	−0.002		0.053		0.001	0.002	−2.81	−40.44			−2.81	−40.27
47	95	0.050		−0.007	0.002		0.053		0.009	−0.002	−3.54	−46.68			−3.54	−46.55
48	96	0.042		0.000	−0.002		0.045		0.001	0.002	−5.00	−55.85			−5.00	−55.76
49	97	0.050		0.007	−0.004		0.053		−0.007	0.004	−5.64	−60.53			−5.64	−60.46
50	98	0.025		−0.007	−0.002		0.027		0.009	0.002	−7.05	−68.17			−7.05	−68.14
51	99	0.050		−0.007	−0.005		0.053		0.009	0.005	−5.83	−70.19			−5.83	−70.19
52	100	0.033		−0.007	−0.002		0.035		0.009	0.002	−5.10	−74.89	−74.29	0.110	−5.10	−74.93
53	101	0.050		0.000	0.000		0.053		0.001	0.000	−3.67	−75.95	−75.66	0.180	−3.67	−76.02
54	102	0.050		−0.007	−0.002		0.053		0.009	0.002	−2.56	−79.52			−2.56	−79.61
55	103	0.083		−0.007	0.004		0.089		0.011	−0.003	−1.86	−80.59	−80.65	0.015	−1.86	−80.71
56	104	0.083		−0.007	0.003		0.089		0.011	−0.002	−0.95	−83.64	−83.98	0.010	−0.95	−83.78
57	105	0.117		0.007	0.012		0.126		−0.002	−0.013	−0.35	−84.13	−84.34	0.010	−0.35	−84.30
58	106	0.117		0.007	0.006		0.126		−0.002	−0.007	0.31	−86.73	−87.14	0.006	0.32	−86.92
59	107	0.125		0.020	0.001		0.135		−0.017	−0.004	0.86	−86.64	−86.99	0.007	0.87	−86.85
60	108	0.125		0.020	0.000		0.135		−0.018	−0.003	1.35	−88.76	−89.25	0.005	1.37	−88.98
61	109	0.125		0.020	−0.002		0.135		−0.018	−0.001	1.76	−88.19	−88.51	0.004	1.77	−88.44
62	110	0.133		0.033	−0.010		0.144		−0.033	0.005	2.11	−89.83	−90.35	0.003	2.14	−90.08
63	111	0.142		0.033	−0.015		0.154		−0.032	0.010	2.42	−88.78	−89.25	0.003	2.45	−89.04
64	112	0.133		0.033	−0.014		0.144		−0.033	0.009	2.52	−90.07	−90.58	0.003	2.55	−90.34
65	113	0.150		0.040	−0.019		0.163		−0.040	0.012	2.61	−88.68	−89.05	0.003	2.66	−88.94
66	114	0.150		0.040	−0.019		0.163		−0.040	0.012	2.50	−89.61	−90.02	0.003	2.56	−89.88
67	115	−0.225		0.040	−0.003		−0.233		−0.025	0.011	2.48	−87.80	−88.09	0.003	2.55	−88.06
68	116	−0.233		0.053	−0.002		−0.241		−0.038	0.014	2.26	−88.30	−88.72	0.003	2.37	−88.53
69	117	−0.242		0.060	−0.004		−0.250		−0.043	0.018	2.12	−86.10	−86.42	0.013	2.25	−86.32
70	118	−0.233		0.060	0.000		−0.241		−0.045	0.014	1.74	−86.24	−86.71	0.020	1.88	−86.44
71	119	−0.242		0.067	0.002		−0.250		−0.051	0.015	1.65	−83.51	−83.94	0.060	1.80	−83.69
72	120	0.125		0.033	−0.011		0.135		−0.034	0.006	0.78	−83.64	−83.97	0.019	0.84	−83.91
73	121	0.125		0.033	−0.012		0.135		−0.034	0.007	0.29	−80.85	−80.95	0.150	0.35	−81.11
74	122	0.100		0.027	−0.008		0.108		−0.029	0.005	−0.49	−80.41			−0.44	−80.68
75	123	0.108		0.033	−0.010		0.116		−0.035	0.006	−1.07	−77.26	−77.31	0.040	−1.01	−77.50

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 48 (Cd)																
76	124	0.000		0.000	0.000		0.000		0.000	0.000	−2.42	−76.94	−76.71	0.060	−2.42	−77.23
77	125	0.000		0.000	−0.001		0.000		0.000	0.001	−3.48	−73.84	−73.32	0.050	−3.48	−74.11
78	126	0.000		0.000	−0.001		0.000		0.000	0.001	−4.52	−72.78	−72.33	0.050	−4.52	−73.02
79	127	0.000		−0.007	−0.002		0.000		0.008	0.002	−5.74	−69.43	−68.52	0.070	−5.74	−69.65
80	128	0.000		0.000	−0.001		0.000		0.000	0.001	−7.13	−68.29	−67.27	0.300	−7.13	−68.49
81	129	0.008		0.007	−0.004		0.008		−0.008	0.004	−8.83	−65.03			−8.82	−65.20
82	130	0.000		0.000	−0.001		0.000		0.000	0.001	−9.85	−63.12			−9.85	−63.26
83	131	−0.008		0.007	−0.002		−0.008		−0.008	0.002	−9.15	−57.08			−9.14	−57.19
84	132	0.000		0.000	−0.001		0.000		0.000	0.001	−8.06	−52.68			−8.06	−52.75
85	133	0.008		−0.007	0.002		0.008		0.008	−0.002	−7.02	−45.93			−7.01	−45.97
86	134	0.000		−0.007	−0.001		0.000		0.008	0.001	−5.78	−41.01			−5.78	−41.00
87	135	0.000		−0.007	−0.001		0.000		0.008	0.001	−4.78	−33.96			−4.78	−33.91
88	136	0.000		−0.007	0.000		0.000		0.008	0.000	−3.72	−28.85			−3.72	−28.75
89	137	0.117		−0.040	0.011		0.125		0.055	−0.005	−2.01	−20.76			−1.86	−20.47
90	138	0.125		−0.033	0.007		0.134		0.047	−0.001	−1.08	−15.43			−0.95	−15.11
91	139	0.175		−0.073	−0.001		0.190		0.104	0.021	0.15	−7.49			0.67	−6.73
92	140	0.200		−0.080	0.009		0.217		0.118	0.015	0.74	−2.18			1.38	−1.24
93	141	0.208		−0.073	0.015		0.225		0.111	0.008	0.80	4.90			1.37	5.82
94	142	0.208		−0.067	0.020		0.224		0.103	0.001	1.05	10.21			1.60	11.16
95	143	0.225		−0.060	0.029		0.243		0.099	−0.009	1.23	17.69			1.78	18.71
96	144	0.233		−0.053	0.033		0.251		0.092	−0.014	1.50	23.32			2.07	24.43
97	145	0.242		−0.040	0.036		0.262		0.078	−0.021	1.48	30.91			2.01	32.04
98	146	0.242		−0.033	0.036		0.262		0.069	−0.023	1.68	36.77			2.21	37.97
99	147	0.242		−0.020	0.034		0.262		0.053	−0.025	1.47	44.44			1.94	45.65
100	148	0.242		−0.013	0.035		0.263		0.045	−0.028	1.55	50.47			2.04	51.77
101	149	0.242		0.000	0.032		0.264		0.029	−0.029	1.31	58.38			1.74	59.70
102	150	0.242		0.013	0.024		0.264		0.012	−0.025	1.43	64.73			1.80	66.06
103	151	0.250		0.027	0.027		0.275		−0.002	−0.032	1.21	72.92			1.70	74.45
104	152	0.242		0.033	0.020		0.266		−0.012	−0.027	1.52	79.73			1.94	81.27
105	153	0.233		0.040	0.009		0.256		−0.024	−0.018	1.49	88.36			1.81	89.89
106	154	0.217		0.047	−0.002		0.238		−0.037	−0.008	1.73	95.36			2.05	96.96
107	155	0.217		0.060	−0.004		0.239		−0.053	−0.010	1.48	104.01			1.90	105.81
108	156	0.217		0.073	−0.010		0.240		−0.069	−0.007	1.36	110.90			1.95	112.96
109	157	0.208		0.080	−0.014		0.230		−0.079	−0.004	0.85	119.53			1.53	121.78
110	158	0.200		0.080	−0.022		0.221		−0.081	0.004	0.65	126.59			1.41	129.00
111	159	0.200		0.093	−0.031		0.221		−0.098	0.010	−0.02	135.28			1.03	138.08
112	160	0.183		0.093	−0.036		0.202		−0.101	0.017	−0.29	142.50			0.89	145.53
113	161	0.175		0.093	−0.034		0.193		−0.102	0.016	−0.77	151.61			0.39	154.72
114	162	0.158		0.080	−0.027		0.173		−0.088	0.013	−0.68	159.41			0.22	162.36
115	163	0.150		0.087	−0.036		0.164		−0.098	0.021	−1.54	168.36			−0.36	171.69
Z = 49 (In)																
43	92	0.050		0.007	−0.002		0.053		−0.007	0.002	−1.60	−3.38			−1.60	−3.02
44	93	0.050		0.007	−0.002		0.053		−0.007	0.002	−2.75	−14.30			−2.75	−13.98
45	94	0.050		0.007	−0.003		0.053		−0.007	0.003	−3.23	−21.98			−3.23	−21.70
46	95	0.050		0.007	−0.002		0.053		−0.007	0.002	−4.44	−31.99			−4.44	−31.74
47	96	0.050		0.007	0.001		0.053		−0.007	−0.001	−5.18	−39.01			−5.19	−38.80
48	97	0.050		0.007	−0.002		0.053		−0.007	0.002	−6.53	−48.22			−6.53	−48.05
49	98	0.050		0.013	−0.004		0.053		−0.015	0.003	−7.33	−54.13			−7.33	−53.99
50	99	0.033		0.013	−0.001		0.035		−0.015	0.001	−8.69	−62.17			−8.69	−62.07
51	100	0.050		0.000	−0.004		0.053		0.001	0.004	−7.48	−64.96			−7.49	−64.90
52	101	0.050		0.007	0.013		0.053		−0.007	−0.013	−6.49	−69.54			−6.49	−69.51
53	102	0.050		0.013	0.014		0.054		−0.014	−0.014	−5.25	−71.53			−5.25	−71.54
54	103	0.050		0.007	−0.001		0.053		−0.007	0.001	−4.12	−75.21	−74.60	0.025	−4.12	−75.26
55	104	0.067		0.000	0.001		0.071		0.002	−0.001	−3.15	−76.75	−76.08	0.120	−3.15	−76.82
56	105	0.067		0.007	0.011		0.072		−0.006	−0.011	−2.11	−79.79	−79.49	0.016	−2.11	−79.90
57	106	0.083		0.007	0.004		0.089		−0.005	−0.005	−1.42	−80.92	−80.61	0.013	−1.42	−81.06
58	107	0.083		0.007	0.001		0.089		−0.006	−0.002	−0.72	−83.61	−83.56	0.013	−0.72	−83.77

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 49$ (In)																
59	108	0.100		0.013	0.000		0.107		−0.011	−0.001	−0.13	−84.18	−84.11	0.027	−0.13	−84.37
60	109	0.092		0.013	−0.001		0.099		−0.012	0.000	0.43	−86.35	−86.49	0.006	0.43	−86.57
61	110	0.092		0.013	−0.001		0.099		−0.012	0.000	1.01	−86.31	−86.47	0.012	1.01	−86.55
62	111	0.092		0.020	−0.006		0.099		−0.021	0.004	1.34	−88.08	−88.39	0.005	1.35	−88.34
63	112	0.092		0.027	−0.007		0.099		−0.029	0.004	1.73	−87.64	−88.00	0.005	1.74	−87.91
64	113	0.083		0.020	−0.006		0.089		−0.021	0.004	1.83	−89.04	−89.37	0.003	1.84	−89.33
65	114	0.083		0.020	−0.007		0.089		−0.021	0.005	2.04	−88.21	−88.57	0.003	2.05	−88.51
66	115	0.075		0.020	−0.006		0.080		−0.022	0.004	1.97	−89.21	−89.54	0.004	1.98	−89.52
67	116	0.092		0.020	−0.009		0.099		−0.021	0.007	2.07	−87.94	−88.25	0.004	2.09	−88.27
68	117	0.075		0.020	−0.005		0.080		−0.022	0.003	1.73	−88.66	−88.94	0.005	1.74	−89.00
69	118	0.083		0.020	−0.007		0.089		−0.021	0.005	1.59	−87.12	−87.23	0.008	1.61	−87.46
70	119	0.075		0.020	−0.006		0.080		−0.022	0.004	1.05	−87.52	−87.73	0.008	1.07	−87.86
71	120	0.083		0.020	−0.007		0.089		−0.021	0.005	0.71	−85.68	−85.73	0.040	0.73	−86.03
72	121	0.075		0.020	−0.006		0.080		−0.022	0.004	−0.02	−85.77	−85.84	0.027	0.00	−86.12
73	122	0.083		0.020	−0.007		0.089		−0.021	0.005	−0.48	−83.58	−83.58	0.050	−0.46	−83.92
74	123	0.067		0.013	−0.005		0.072		−0.014	0.004	−1.45	−83.43	−83.43	0.023	−1.44	−83.77
75	124	0.075		0.020	−0.006		0.080		−0.022	0.004	−2.10	−80.97	−80.88	0.050	−2.08	−81.30
76	125	0.050		0.013	−0.005		0.053		−0.015	0.004	−3.34	−80.63	−80.48	0.025	−3.33	−80.95
77	126	0.050		0.013	−0.003		0.053		−0.015	0.002	−4.24	−77.99	−77.81	0.040	−4.23	−78.30
78	127	0.025		0.007	−0.003		0.027		−0.008	0.003	−5.68	−77.40	−76.99	0.040	−5.68	−77.71
79	128	0.025		0.007	0.001		0.027		−0.008	−0.001	−6.83	−74.60	−74.34	0.060	−6.83	−74.88
80	129	0.008		0.007	−0.003		0.008		−0.008	0.003	−8.31	−73.62	−72.97	0.130	−8.30	−73.89
81	130	0.025		0.013	−0.006		0.027		−0.015	0.006	−9.60	−70.56	−69.88	0.090	−9.59	−70.79
82	131	0.008		−0.007	0.001		0.008		0.008	−0.001	−10.59	−68.69	−68.19	0.080	−10.58	−68.90
83	132	0.017		−0.013	−0.006		0.018		0.016	0.006	−9.97	−63.32	−63.01	0.410	−9.96	−63.50
84	133	0.008		0.007	−0.003		0.008		−0.008	0.003	−8.92	−59.03			−8.92	−59.19
85	134	0.025		−0.007	0.000		0.026		0.009	0.000	−7.74	−52.73			−7.74	−52.86
86	135	0.025		0.007	−0.002		0.027		−0.008	0.002	−6.55	−47.92			−6.55	−48.01
87	136	0.033		0.013	−0.002		0.035		−0.015	0.002	−5.45	−41.35			−5.44	−41.39
88	137	0.042		0.007	−0.002		0.045		−0.008	0.002	−4.32	−36.23			−4.31	−36.24
89	138	0.100	0.011	−0.033	0.004	−0.001	0.107	−0.015	0.044	0.001	−2.73	−28.82			−2.63	−28.70
90	139	0.100		−0.033	−0.001		0.107		0.044	0.006	−2.00	−23.75			−1.89	−23.58
91	140	0.125		−0.033	0.010		0.134		0.047	−0.004	−1.03	−16.63			−0.91	−16.40
92	141	0.192		−0.080	0.008		0.208		0.117	0.015	0.35	−10.59			0.92	−9.85
93	142	0.200		−0.073	0.013		0.216		0.109	0.009	0.49	−3.98			1.00	−3.26
94	143	0.208		−0.060	0.017		0.224		0.094	0.002	0.86	1.39			1.29	2.08
95	144	0.225		−0.053	0.025		0.243		0.090	−0.007	1.11	8.41			1.53	9.16
96	145	0.225		−0.047	0.027		0.243		0.082	−0.011	1.33	13.94			1.75	14.74
97	146	0.233		−0.040	0.031		0.252		0.076	−0.017	1.35	21.03			1.78	21.90
98	147	0.242		−0.033	0.034		0.262		0.069	−0.021	1.59	26.88			2.06	27.86
99	148	0.242		−0.020	0.033		0.262		0.053	−0.024	1.39	34.04			1.81	35.03
100	149	0.242		−0.013	0.033		0.263		0.045	−0.026	1.50	40.04			1.92	41.10
101	150	0.242		−0.007	0.035		0.263		0.038	−0.030	1.26	47.43			1.71	48.60
102	151	0.250		0.013	0.025		0.273		0.014	−0.026	1.39	53.74			1.75	54.89
103	152	0.250		0.020	0.023		0.274		0.005	−0.026	1.26	61.52			1.62	62.74
104	153	0.250		0.027	0.016		0.274		−0.004	−0.021	1.53	68.24			1.85	69.50
105	154	0.242		0.033	0.007		0.265		−0.014	−0.014	1.38	76.26			1.64	77.52
106	155	0.225		0.040	−0.004		0.247		−0.027	−0.005	1.46	83.04			1.71	84.39
107	156	0.225		0.053	−0.008		0.247		−0.043	−0.004	1.24	91.24			1.57	92.74
108	157	0.225		0.060	−0.013		0.248		−0.052	−0.001	1.20	98.17			1.62	99.84
109	158	0.225		0.073	−0.020		0.248		−0.069	0.002	0.77	106.39			1.35	108.31
110	159	0.192		0.067	−0.020		0.211		−0.067	0.006	0.53	113.36			1.07	115.33
111	160	0.175		0.067	−0.020		0.192		−0.069	0.007	0.18	121.89			0.71	123.96
112	161	0.158		0.067	−0.019		0.173		−0.071	0.007	0.09	129.26			0.65	131.43
113	162	0.150		0.067	−0.016		0.164		−0.072	0.005	−0.39	137.89			0.15	140.14
114	163	0.150		0.073	−0.024		0.164		−0.080	0.012	−0.86	145.11			−0.15	147.63
115	164	0.150		0.080	−0.035		0.164		−0.089	0.022	−1.67	153.62			−0.69	156.51

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 49 (In)																
116	165	0.142		0.080	−0.039		0.155		−0.090	0.026	−2.00	161.20			−0.90	164.32
117	166	0.117		0.067	−0.022		0.127		−0.076	0.013	−2.88	169.87			−2.24	172.62
Z = 50 (Sn)																
44	94	0.008		0.027	0.002		0.009		−0.032	−0.002	−4.15	−6.70			−4.15	−6.26
45	95	0.017		0.020	0.001		0.018		−0.023	−0.001	−4.62	−14.52			−4.62	−14.13
46	96	0.017		0.020	0.001		0.018		−0.023	−0.001	−5.86	−25.33			−5.85	−24.98
47	97	0.017		−0.020	0.001		0.018		0.024	0.000	−6.61	−32.52			−6.61	−32.21
48	98	0.008		0.020	0.002		0.009		−0.024	−0.002	−8.04	−42.58			−8.04	−42.32
49	99	0.033		0.013	−0.001		0.035		−0.015	0.001	−8.63	−48.73			−8.63	−48.51
50	100	0.008		0.013	0.001		0.009		−0.015	−0.001	−10.02	−57.87			−10.02	−57.69
51	101	0.025		−0.020	−0.004		0.027		0.024	0.005	−9.02	−60.99			−9.02	−60.86
52	102	0.008		0.013	0.001		0.009		−0.015	−0.001	−8.09	−66.38			−8.09	−66.29
53	103	0.017		0.013	0.001		0.018		−0.015	−0.001	−6.67	−68.34			−6.67	−68.28
54	104	0.017		−0.013	0.000		0.018		0.016	0.000	−5.49	−72.70	−71.53	0.320	−5.49	−72.68
55	105	0.025		−0.007	0.000		0.026		0.009	0.000	−4.36	−74.20	−73.18	0.090	−4.36	−74.22
56	106	0.025		−0.013	0.000		0.027		0.016	0.000	−3.34	−78.00	−77.42	0.050	−3.34	−78.05
57	107	0.042		0.000	−0.002		0.045		0.001	0.002	−2.25	−78.85			−2.25	−78.94
58	108	0.033		−0.007	0.000		0.035		0.009	0.000	−1.50	−82.21	−81.99	0.050	−1.51	−82.33
59	109	0.050		0.000	0.002		0.053		0.001	−0.002	−0.73	−82.72	−82.63	0.010	−0.73	−82.88
60	110	0.025		0.007	−0.001		0.027		−0.008	0.001	−0.41	−85.83	−85.83	0.016	−0.41	−86.01
61	111	0.042		0.007	0.000		0.045		−0.008	0.000	0.13	−85.95	−85.94	0.007	0.13	−86.16
62	112	0.017		0.013	0.001		0.018		−0.015	−0.001	0.37	−88.50	−88.66	0.004	0.37	−88.74
63	113	0.042		0.007	−0.001		0.045		−0.008	0.001	0.89	−88.04	−88.33	0.004	0.89	−88.30
64	114	0.000		0.013	0.000		0.000		−0.015	0.000	0.81	−90.30	−90.56	0.003	0.81	−90.59
65	115	0.017		0.007	−0.001		0.018		−0.008	0.001	1.03	−89.57	−90.03	0.003	1.03	−89.87
66	116	0.000		0.007	0.000		0.000		−0.008	0.000	0.94	−91.26	−91.53	0.003	0.94	−91.58
67	117	−0.042		0.000	−0.001		−0.044		0.001	0.001	0.96	−90.18	−90.40	0.003	0.96	−90.52
68	118	0.000		0.000	0.000		0.000		0.000	0.000	0.75	−91.43	−91.65	0.003	0.75	−91.78
69	119	0.000		0.000	0.000		0.000		0.000	0.000	0.70	−89.91	−90.07	0.003	0.70	−90.27
70	120	0.000		0.000	0.000		0.000		0.000	0.000	0.19	−90.92	−91.10	0.003	0.19	−91.29
71	121	−0.008		0.007	0.000		−0.008		−0.008	0.000	−0.28	−89.31	−89.20	0.003	−0.28	−89.69
72	122	0.000		0.000	0.000		0.000		0.000	0.000	−0.99	−90.01	−89.94	0.003	−0.99	−90.40
73	123	0.000		0.000	0.000		0.000		0.000	0.000	−1.53	−88.00	−87.82	0.003	−1.53	−88.39
74	124	0.000		0.000	0.000		0.000		0.000	0.000	−2.51	−88.49	−88.24	0.001	−2.51	−88.87
75	125	0.000		0.000	−0.001		0.000		0.000	0.001	−3.23	−86.19	−85.90	0.002	−3.23	−86.57
76	126	0.000		0.000	0.000		0.000		0.000	0.000	−4.36	−86.36	−86.02	0.011	−4.36	−86.74
77	127	0.000		0.000	0.000		0.000		0.000	0.000	−5.30	−83.84	−83.51	0.025	−5.30	−84.21
78	128	0.000		0.000	−0.002		0.000		0.000	0.002	−6.58	−83.71	−83.33	0.050	−6.58	−84.06
79	129	0.000		−0.007	−0.003		0.000		0.008	0.003	−7.67	−80.92	−80.62	0.120	−7.67	−81.26
80	130	0.000		0.000	−0.001		0.000		0.000	0.001	−9.14	−80.55	−80.13	0.080	−9.14	−80.88
81	131	0.008		0.007	−0.004		0.008		−0.008	0.004	−10.43	−77.56	−77.38	0.070	−10.43	−77.87
82	132	0.000		0.000	−0.001		0.000		0.000	0.001	−11.55	−76.41	−76.61	0.080	−11.55	−76.70
83	133	0.000		0.007	−0.002		0.000		−0.008	0.002	−10.80	−70.99	−71.19	0.220	−10.79	−71.25
84	134	0.000		0.000	−0.001		0.000		0.000	0.001	−9.67	−67.20			−9.67	−67.44
85	135	0.000		−0.007	0.000		0.000		0.008	0.000	−8.51	−61.00			−8.51	−61.21
86	136	0.000		0.007	0.000		0.000		−0.008	0.000	−7.23	−56.67			−7.23	−56.85
87	137	0.000		−0.007	0.000		0.000		0.008	0.000	−6.18	−50.21			−6.17	−50.36
88	138	0.000		−0.007	−0.001		0.000		0.008	0.001	−5.08	−45.70			−5.08	−45.82
89	139	0.000		−0.013	0.000		0.000		0.015	0.000	−4.06	−38.92			−4.05	−39.00
90	140	0.000		−0.013	−0.001		0.000		0.015	0.001	−3.12	−34.20			−3.11	−34.24
91	141	0.092		−0.033	0.004		0.098		0.044	0.000	−1.76	−26.77			−1.67	−26.67
92	142	0.100		−0.033	0.007		0.107		0.044	−0.002	−1.01	−21.90			−0.91	−21.75
93	143	0.200		−0.073	0.012		0.216		0.109	0.010	0.24	−14.24			0.73	−13.65
94	144	0.200		−0.067	0.016		0.216		0.102	0.004	0.54	−9.49			1.01	−8.88
95	145	0.217		−0.053	0.019		0.234		0.088	−0.002	0.81	−2.50			1.20	−1.92
96	146	0.225		−0.047	0.022		0.243		0.082	−0.006	1.14	2.60			1.53	3.23
97	147	0.233		−0.040	0.027		0.252		0.075	−0.012	1.19	9.66			1.57	10.35

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 50$ (Sn)																
98	148	0.242		−0.027	0.028		0.262		0.061	−0.017	1.53	15.08			1.90	15.81
99	149	0.242		−0.020	0.029		0.262		0.053	−0.020	1.34	22.20			1.70	22.98
100	150	0.242		−0.013	0.028		0.263		0.044	−0.021	1.48	27.71			1.84	28.55
101	151	0.250		0.000	0.031		0.273		0.031	−0.028	1.28	35.10			1.67	36.04
102	152	0.250		0.007	0.026		0.273		0.021	−0.025	1.42	40.91			1.78	41.88
103	153	0.250		0.013	0.028		0.273		0.015	−0.029	1.27	48.61			1.66	49.69
104	154	0.250		0.027	0.017		0.274		−0.004	−0.022	1.58	54.87			1.91	55.95
105	155	0.250		0.033	0.005		0.274		−0.012	−0.012	1.50	62.90			1.75	63.99
106	156	0.242		0.040	−0.006		0.266		−0.024	−0.003	1.63	69.25			1.90	70.42
107	157	0.233		0.047	−0.008		0.256		−0.034	−0.003	1.44	77.42			1.73	78.70
108	158	0.242		0.060	−0.013		0.267		−0.049	−0.002	1.58	84.04			2.00	85.52
109	159	0.233		0.067	−0.020		0.257		−0.060	0.003	1.11	92.18			1.62	93.83
110	160	0.225		0.073	−0.027		0.248		−0.069	0.009	0.91	98.71			1.56	100.59
111	161	0.158		0.053	−0.009		0.172		−0.054	0.000	0.63	107.28			0.96	108.92
112	162	0.150		0.053	−0.011		0.163		−0.055	0.002	0.32	113.94			0.67	115.68
113	163	0.150		0.060	−0.014		0.164		−0.064	0.004	−0.24	122.46			0.19	124.38
114	164	0.133		0.060	−0.018		0.145		−0.066	0.009	−0.57	129.33			−0.10	131.38
115	165	0.133		0.067	−0.018		0.145		−0.074	0.008	−1.30	137.91			−0.73	140.15
116	166	0.100		0.047	−0.007		0.108		−0.052	0.002	−1.87	144.77			−1.59	146.82
117	167	0.100		0.053	−0.015		0.108		−0.060	0.009	−2.76	153.39			−2.37	155.65
118	168	0.100		0.053	−0.025		0.108		−0.060	0.019	−3.27	160.55			−2.75	163.03
119	169	0.083		0.047	−0.021		0.089		−0.054	0.017	−4.25	169.28			−3.85	171.76
$Z = 51$ (Sb)																
46	97	0.050		−0.013	−0.006		0.053		0.017	0.007	−4.11	−12.31			−4.11	−11.86
47	98	0.050		−0.020	−0.005		0.053		0.025	0.006	−4.82	−20.22			−4.82	−19.82
48	99	0.050		−0.013	−0.007		0.053		0.017	0.008	−6.10	−30.29			−6.10	−29.93
49	100	0.050		−0.007	−0.008		0.053		0.009	0.008	−6.83	−37.33			−6.83	−37.01
50	101	0.033		−0.020	−0.009		0.035		0.024	0.010	−8.22	−46.60			−8.22	−46.33
51	102	0.050		−0.027	−0.021		0.054		0.034	0.023	−7.10	−50.66			−7.10	−50.44
52	103	0.050		−0.027	−0.015		0.054		0.034	0.017	−6.18	−56.49			−6.18	−56.31
53	104	0.075		−0.040	−0.013		0.081		0.051	0.018	−4.94	−59.35			−4.93	−59.21
54	105	0.075		−0.040	−0.013		0.081		0.051	0.018	−3.83	−63.92			−3.82	−63.82
55	106	0.092		−0.040	−0.003		0.099		0.052	0.008	−2.88	−66.33			−2.88	−66.28
56	107	0.092		−0.040	−0.002		0.098		0.052	0.007	−1.94	−70.32			−1.93	−70.30
57	108	0.100		−0.033	0.000		0.107		0.044	0.005	−1.11	−72.14			−1.10	−72.17
58	109	0.100		−0.033	0.001		0.107		0.044	0.004	−0.42	−75.68	−76.25	0.019	−0.41	−75.74
59	110	0.100		−0.020	−0.001		0.107		0.028	0.004	0.17	−77.08			0.17	−77.18
60	111	0.100		−0.020	−0.002		0.107		0.028	0.005	0.73	−80.07			0.73	−80.21
61	112	0.100		−0.020	−0.002		0.107		0.028	0.005	1.23	−80.92	−81.60	0.023	1.23	−81.09
62	113	0.100		−0.013	−0.007		0.107		0.020	0.009	1.54	−83.52	−84.42	0.024	1.54	−83.71
63	114	−0.108		−0.013	−0.004		−0.112		0.020	0.002	1.85	−83.94	−84.68	0.200	1.86	−84.17
64	115	−0.108		−0.013	−0.007		−0.112		0.020	0.005	1.83	−86.25	−87.00	0.020	1.84	−86.50
65	116	−0.117		−0.013	−0.010		−0.122		0.021	0.008	1.92	−86.32	−86.82	0.006	1.93	−86.60
66	117	−0.117		−0.007	−0.009		−0.122		0.014	0.007	1.70	−88.25	−88.64	0.009	1.71	−88.55
67	118	−0.133		−0.007	−0.014		−0.138		0.016	0.012	1.65	−87.90	−88.00	0.004	1.67	−88.21
68	119	−0.117		0.000	−0.008		−0.122		0.006	0.007	1.36	−89.34	−89.47	0.008	1.37	−89.67
69	120	−0.117		0.000	−0.007		−0.122		0.006	0.006	1.22	−88.55	−88.42	0.008	1.23	−88.90
70	121	−0.108		0.007	−0.002		−0.113		−0.003	0.003	0.76	−89.61	−89.59	0.002	0.77	−89.97
71	122	−0.108		0.007	−0.002		−0.113		−0.003	0.003	0.52	−88.41	−88.32	0.002	0.52	−88.79
72	123	−0.100		0.013	0.002		−0.105		−0.011	−0.001	−0.16	−89.18	−89.22	0.002	−0.15	−89.57
73	124	−0.100		0.013	0.003		−0.105		−0.011	−0.001	−0.61	−87.71	−87.62	0.002	−0.60	−88.10
74	125	−0.083		0.013	0.004		−0.087		−0.012	−0.003	−1.57	−88.26	−88.26	0.003	−1.56	−88.66
75	126	−0.092		0.020	0.007		−0.096		−0.020	−0.005	−2.15	−86.45	−86.40	0.030	−2.13	−86.84
76	127	−0.067		0.007	0.003		−0.070		−0.006	−0.002	−3.43	−86.85	−86.71	0.006	−3.42	−87.25
77	128	−0.067		0.007	0.003		−0.070		−0.006	−0.002	−4.27	−84.85	−84.61	0.040	−4.26	−85.25
78	129	−0.033		0.000	0.001		−0.035		0.000	−0.001	−5.87	−85.12	−84.62	0.022	−5.87	−85.52
79	130	−0.042		0.007	0.004		−0.044		−0.008	−0.004	−6.86	−82.83	−82.33	0.070	−6.85	−83.22

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 51 (Sb)																
80	131	−0.008		0.007	0.001		−0.008		−0.008	−0.001	−8.43	−82.64	−82.02	0.070	−8.43	−83.02
81	132	−0.025		0.007	0.005		−0.026		−0.008	−0.005	−9.60	−80.12	−79.81	0.110	−9.60	−80.49
82	133	−0.008		0.007	0.000		−0.008		−0.008	0.000	−10.64	−78.97	−79.02	0.210	−10.64	−79.32
83	134	−0.025		−0.013	0.001		−0.026		0.016	−0.001	−10.04	−74.29	−74.03	0.160	−10.03	−74.62
84	135	−0.008		0.013	−0.004		−0.008		−0.015	0.004	−8.78	−70.44	−69.74	0.110	−8.77	−70.75
85	136	0.033		−0.027	−0.019		0.036		0.033	0.020	−7.72	−64.92			−7.64	−65.13
86	137	0.050		−0.033	−0.029		0.054		0.041	0.032	−6.47	−60.69			−6.29	−60.78
87	138	0.092		−0.053	−0.014		0.100		0.068	0.022	−4.71	−54.09			−4.51	−54.13
88	139	0.092		−0.053	−0.011		0.099		0.068	0.019	−3.84	−49.88			−3.64	−49.88
89	140	0.108		−0.060	0.003		0.116		0.079	0.006	−2.89	−43.73			−2.67	−43.69
90	141	0.117		−0.060	0.004		0.126		0.080	0.006	−2.12	−39.25			−1.87	−39.15
91	142	0.167		−0.073	0.001		0.181		0.103	0.017	−0.77	−32.36			−0.37	−32.07
92	143	0.175		−0.073	0.006		0.189		0.105	0.013	−0.32	−27.86			0.10	−27.51
93	144	0.192		−0.073	0.010		0.207		0.108	0.011	0.04	−21.64			0.48	−21.23
94	145	0.192		−0.067	0.014		0.207		0.100	0.005	0.38	−16.91			0.80	−16.48
95	146	0.200		−0.060	0.017		0.215		0.093	0.001	0.50	−10.61			0.87	−10.18
96	147	0.200		−0.053	0.019		0.215		0.084	−0.003	0.78	−5.62			1.13	−5.16
97	148	0.217		−0.047	0.025		0.234		0.080	−0.010	0.91	1.01			1.27	1.53
98	149	0.217		−0.040	0.027		0.234		0.072	−0.014	1.16	6.28			1.52	6.85
99	150	0.225		−0.033	0.032		0.243		0.065	−0.020	1.09	12.99			1.46	13.64
100	151	0.225		−0.020	0.027		0.243		0.049	−0.019	1.28	18.51			1.60	19.15
101	152	0.233		−0.013	0.031		0.253		0.042	−0.025	1.11	25.41			1.46	26.15
102	153	0.233		0.000	0.025		0.253		0.026	−0.022	1.28	31.19			1.57	31.93
103	154	0.250		0.020	0.031		0.274		0.007	−0.034	1.12	38.38			1.55	39.33
104	155	0.250		0.027	0.022		0.274		−0.003	−0.027	1.42	44.58			1.78	45.52
105	156	0.242		0.033	0.012		0.266		−0.013	−0.019	1.32	52.09			1.59	53.01
106	157	0.233		0.040	0.001		0.256		−0.025	−0.010	1.50	58.44			1.75	59.41
107	158	0.233		0.047	−0.002		0.256		−0.034	−0.009	1.37	66.18			1.65	67.26
108	159	0.242		0.060	−0.006		0.267		−0.048	−0.009	1.52	72.77			1.92	74.03
109	160	0.233		0.067	−0.015		0.257		−0.059	−0.002	1.11	80.48			1.56	81.88
110	161	0.233		0.073	−0.024		0.257		−0.068	0.005	1.09	87.15			1.67	88.75
111	162	0.167		0.040	−0.011		0.182		−0.037	0.004	0.74	95.16			0.95	96.49
112	163	0.150		0.040	−0.013		0.163		−0.040	0.006	0.52	101.88			0.74	103.29
113	164	0.150		0.047	−0.015		0.163		−0.048	0.007	−0.04	109.92			0.25	111.49
114	165	0.150		0.060	−0.022		0.163		−0.064	0.012	−0.46	116.68			0.03	118.52
115	166	0.142		0.067	−0.025		0.155		−0.074	0.014	−1.11	124.86			−0.50	126.91
116	167	0.117		0.053	−0.011		0.127		−0.058	0.004	−1.76	131.61			−1.41	133.49
117	168	0.108		0.053	−0.015		0.117		−0.059	0.009	−2.53	139.89			−2.16	141.89
118	169	0.100		0.053	−0.023		0.108		−0.060	0.017	−3.03	147.02			−2.58	149.20
119	170	−0.125		0.020	−0.011		−0.131		−0.016	0.013	−3.72	155.59			−3.58	157.56
120	171	−0.117		0.013	−0.011		−0.122		−0.009	0.012	−3.97	163.20			−3.85	165.24
121	172	−0.100		0.007	−0.008		−0.105		−0.004	0.008	−5.17	171.46			−5.10	173.55
Z = 52 (Te)																
47	99	0.050		−0.013	0.003		0.053		0.017	−0.002	−3.73	−10.02			−3.73	−9.50
48	100	0.033		−0.007	0.001		0.035		0.009	−0.001	−5.26	−21.09			−5.26	−20.62
49	101	0.050		0.000	−0.002		0.053		0.001	0.002	−5.64	−27.92			−5.64	−27.50
50	102	0.025		−0.007	0.001		0.026		0.009	−0.001	−7.11	−38.03			−7.11	−37.66
51	103	0.050		−0.020	−0.010		0.053		0.025	0.011	−5.89	−42.42			−5.89	−42.09
52	104	0.042		−0.013	−0.002		0.045		0.016	0.003	−5.03	−49.33			−5.03	−49.06
53	105	0.050		−0.013	0.003		0.053		0.017	−0.002	−3.72	−52.26			−3.72	−52.03
54	106	0.092		−0.040	−0.006		0.099		0.052	0.011	−3.01	−57.94			−3.00	−57.76
55	107	0.125		−0.047	0.010		0.134		0.064	−0.002	−1.94	−60.36			−1.93	−60.23
56	108	0.125		−0.040	0.011		0.134		0.056	−0.004	−1.18	−65.25	−65.67	0.320	−1.17	−65.16
57	109	0.133		−0.033	0.011		0.142		0.048	−0.005	−0.41	−67.26	−67.56	0.080	−0.40	−67.22
58	110	0.142		−0.033	0.013		0.152		0.049	−0.006	0.25	−71.54	−72.27	0.060	0.26	−71.53
59	111	0.150		−0.027	0.007		0.161		0.043	−0.001	0.85	−73.04	−73.47	0.070	0.85	−73.08
60	112	0.150		−0.027	0.008		0.161		0.043	−0.002	1.33	−76.80	−77.21	0.170	1.35	−76.87

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 52$ (Te)																
61	113	0.158		−0.027	0.003		0.170		0.044	0.003	1.67	−77.93			1.68	−78.04
62	114	0.150		−0.020	0.002		0.161		0.034	0.003	2.04	−81.15			2.06	−81.29
63	115	0.183		−0.020	0.000		0.197		0.039	0.006	2.09	−81.95	−82.35	0.230	2.10	−82.13
64	116	0.167		−0.013	−0.007		0.180		0.027	0.011	2.28	−84.72	−85.29	0.100	2.30	−84.92
65	117	−0.142		−0.013	−0.013		−0.147		0.023	0.010	2.66	−84.61	−85.11	0.019	2.67	−84.85
66	118	−0.142		−0.007	−0.013		−0.147		0.017	0.011	2.46	−87.18	−87.65	0.023	2.47	−87.45
67	119	−0.150		−0.007	−0.018		−0.155		0.018	0.015	2.38	−86.97	−87.18	0.008	2.40	−87.25
68	120	−0.150		0.000	−0.014		−0.156		0.010	0.013	2.08	−89.07	−89.39	0.019	2.10	−89.37
69	121	−0.150		0.007	−0.013		−0.156		0.001	0.013	1.89	−88.43	−88.55	0.026	1.91	−88.75
70	122	−0.133		0.007	−0.008		−0.139		−0.001	0.008	1.55	−90.01	−90.30	0.003	1.57	−90.36
71	123	−0.133		0.013	−0.004		−0.139		−0.008	0.005	1.30	−88.92	−89.17	0.002	1.32	−89.29
72	124	−0.108		0.013	0.001		−0.113		−0.010	0.000	0.66	−90.29	−90.52	0.002	0.68	−90.67
73	125	−0.108		0.020	0.004		−0.113		−0.018	−0.001	0.25	−88.87	−89.03	0.002	0.26	−89.26
74	126	−0.100		0.020	0.006		−0.105		−0.019	−0.003	−0.62	−89.96	−90.07	0.002	−0.60	−90.36
75	127	−0.100		0.027	0.009		−0.104		−0.027	−0.005	−1.22	−88.25	−88.29	0.003	−1.19	−88.65
76	128	0.000		0.000	0.000		0.000		0.000	0.000	−2.46	−89.23	−88.99	0.003	−2.46	−89.66
77	129	−0.008		0.000	−0.001		−0.008		0.000	0.001	−3.52	−87.54	−87.00	0.004	−3.52	−87.97
78	130	0.000		0.000	0.000		0.000		0.000	0.000	−4.74	−88.03	−87.35	0.004	−4.74	−88.46
79	131	0.000		−0.007	−0.002		0.000		0.008	0.002	−5.79	−85.90	−85.21	0.004	−5.79	−86.32
80	132	0.000		0.000	0.000		0.000		0.000	0.000	−7.33	−86.26	−85.22	0.012	−7.33	−86.69
81	133	0.008		0.007	−0.003		0.008		−0.008	0.003	−8.53	−83.86	−82.97	0.080	−8.53	−84.27
82	134	0.000		0.000	−0.001		0.000		0.000	0.001	−9.57	−83.30	−82.44	0.110	−9.57	−83.71
83	135	−0.008		0.007	−0.002		−0.008		−0.008	0.002	−8.91	−78.63	−77.86	0.090	−8.90	−79.02
84	136	0.000		0.000	0.000		0.000		0.000	0.000	−7.79	−75.50	−74.46	0.050	−7.79	−75.88
85	137	0.008		−0.007	0.003		0.008		0.008	−0.003	−6.64	−69.96	−69.56	0.120	−6.64	−70.32
86	138	0.000		0.000	0.000		0.000		0.000	0.000	−5.39	−66.31			−5.39	−66.65
87	139	0.108		−0.067	−0.005		0.117		0.088	0.016	−3.82	−59.97			−3.57	−60.03
88	140	0.117		−0.067	0.001		0.126		0.089	0.011	−2.87	−56.23			−2.60	−56.26
89	141	0.142		−0.073	0.010		0.153		0.099	0.005	−1.87	−50.11			−1.55	−50.05
90	142	0.150		−0.073	0.008		0.162		0.101	0.008	−1.27	−46.36			−0.91	−46.24
91	143	0.167		−0.080	0.003		0.181		0.112	0.017	−0.77	−40.39			−0.33	−40.15
92	144	0.175		−0.080	0.009		0.189		0.114	0.012	−0.40	−36.51			0.08	−36.21
93	145	0.192		−0.080	0.014		0.207		0.117	0.009	−0.12	−30.43			0.38	−30.07
94	146	0.192		−0.073	0.018		0.207		0.108	0.003	0.25	−26.21			0.71	−25.84
95	147	0.200		−0.067	0.022		0.215		0.102	−0.002	0.37	−19.97			0.80	−19.59
96	148	0.200		−0.060	0.024		0.215		0.093	−0.007	0.66	−15.50			1.08	−15.09
97	149	0.208		−0.053	0.027		0.224		0.086	−0.011	0.71	−9.02			1.11	−8.58
98	150	0.208		−0.047	0.030		0.224		0.079	−0.016	0.99	−4.24			1.39	−3.76
99	151	0.217		−0.040	0.035		0.234		0.072	−0.022	0.99	2.49			1.42	3.06
100	152	0.217		−0.027	0.031		0.234		0.056	−0.022	1.22	7.53			1.58	8.08
101	153	0.225		−0.013	0.032		0.244		0.041	−0.026	1.04	14.37			1.39	14.96
102	154	0.225		−0.007	0.031		0.244		0.033	−0.027	1.20	19.62			1.55	20.27
103	155	0.242		0.013	0.038		0.265		0.014	−0.039	0.93	26.66			1.43	27.52
104	156	0.250		0.027	0.027		0.275		−0.002	−0.032	1.29	32.41			1.72	33.26
105	157	0.242		0.033	0.017		0.266		−0.013	−0.024	1.24	39.93			1.56	40.73
106	158	0.233		0.040	0.005		0.256		−0.024	−0.014	1.50	45.85			1.77	46.67
107	159	0.233		0.047	0.003		0.256		−0.033	−0.014	1.38	53.57			1.68	54.49
108	160	0.242		0.060	−0.005		0.267		−0.048	−0.010	1.58	59.71			1.98	60.79
109	161	0.233		0.067	−0.010		0.257		−0.059	−0.007	1.24	67.45			1.68	68.65
110	162	0.233		0.073	−0.018		0.258		−0.067	0.000	1.28	73.69			1.83	75.07
111	163	0.225		0.080	−0.027		0.249		−0.078	0.007	0.82	81.56			1.49	83.14
112	164	0.175		0.047	−0.015		0.191		−0.045	0.006	0.72	87.91			1.02	89.20
113	165	0.167		0.053	−0.016		0.182		−0.053	0.006	0.31	96.07			0.66	97.48
114	166	0.150		0.053	−0.019		0.163		−0.056	0.010	−0.05	102.40			0.32	103.93
115	167	0.150		0.073	−0.026		0.164		−0.080	0.014	−0.74	110.50			−0.08	112.40
116	168	0.133		0.060	−0.016		0.145		−0.065	0.007	−1.03	117.15			−0.59	118.91
117	169	0.117		0.053	−0.014		0.127		−0.058	0.007	−2.12	125.08			−1.77	126.84

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 52 (Te)																
118	170	0.108		0.053	−0.022		0.117		−0.060	0.016	−2.52	131.85			−2.08	133.79
119	171	−0.142		0.020	−0.010		−0.148		−0.014	0.012	−3.05	140.56			−2.89	142.31
120	172	−0.133		0.013	−0.031		−0.139		−0.006	0.031	−3.76	147.23			−3.33	149.35
121	173	−0.100		0.007	−0.008		−0.105		−0.004	0.008	−4.64	155.80			−4.57	157.65
122	174	−0.083		0.007	0.001		−0.087		−0.005	0.000	−5.54	162.51			−5.50	164.42
123	175	−0.067		0.013	0.005		−0.070		−0.013	−0.004	−7.05	170.64			−7.01	172.65
124	176	−0.050		0.027	0.010		−0.052		−0.030	−0.008	−8.02	177.49			−7.89	179.70
Z = 53 (I)																
48	101	0.058		−0.033	−0.004		0.062		0.041	0.007	−3.74	−8.07			−3.73	−7.47
49	102	0.058		−0.013	−0.008		0.062		0.017	0.009	−4.31	−15.83			−4.31	−15.30
50	103	0.042		−0.027	−0.007		0.045		0.033	0.009	−5.30	−25.60			−5.30	−25.11
51	104	0.067		−0.040	−0.015		0.072		0.050	0.019	−4.60	−31.23			−4.59	−30.80
52	105	0.083		−0.040	−0.009		0.089		0.051	0.014	−3.89	−38.44			−3.89	−38.06
53	106	0.125		−0.053	0.008		0.134		0.072	0.001	−2.67	−42.45			−2.67	−42.13
54	107	0.133		−0.047	0.012		0.142		0.066	−0.003	−1.91	−48.52			−1.91	−48.24
55	108	0.142		−0.040	0.021		0.152		0.058	−0.013	−1.15	−51.95			−1.15	−51.74
56	109	0.150		−0.040	0.024		0.160		0.060	−0.016	−0.43	−57.01	−57.56	0.320	−0.43	−56.84
57	110	0.150	0.034	−0.040	0.010	0.022	0.161	−0.047	0.059	−0.001	0.19	−59.87			0.19	−59.75
58	111	0.150		−0.033	0.022		0.161		0.051	−0.015	0.80	−64.31			0.80	−64.24
59	112	0.167		−0.033	0.021		0.179		0.053	−0.013	1.22	−66.69			1.22	−66.67
60	113	0.167		−0.027	0.017		0.179		0.046	−0.010	1.72	−70.55	−71.12	0.050	1.73	−70.56
61	114	0.192		−0.027	0.016		0.207		0.050	−0.008	1.88	−72.53			1.88	−72.59
62	115	0.183		−0.020	0.010		0.197		0.039	−0.004	2.28	−75.85			2.28	−75.94
63	116	0.200		−0.020	0.010		0.216		0.042	−0.003	2.36	−77.28	−77.54	0.140	2.36	−77.42
64	117	0.192		−0.013	0.006		0.207		0.032	−0.001	2.56	−80.16			2.57	−80.33
65	118	0.208		0.000	0.003		0.226		0.019	−0.001	2.58	−81.06			2.58	−81.27
66	119	0.200		0.000	0.002		0.217		0.017	−0.001	2.61	−83.52	−83.78	0.100	2.62	−83.74
67	120	0.208		0.007	0.000		0.226		0.010	0.000	2.51	−83.97	−83.77	0.024	2.52	−84.24
68	121	−0.167		0.000	−0.019		−0.173		0.012	0.017	2.60	−85.78	−86.27	0.020	2.62	−86.05
69	122	−0.175		0.000	−0.020		−0.181		0.013	0.018	2.43	−85.76	−86.07	0.006	2.45	−86.06
70	123	−0.158		0.007	−0.013		−0.164		0.002	0.013	2.14	−87.40	−87.93	0.004	2.16	−87.73
71	124	−0.158		0.007	−0.009		−0.164		0.002	0.009	1.93	−86.90	−87.37	0.004	1.95	−87.25
72	125	−0.150		0.013	−0.005		−0.156		−0.006	0.006	1.46	−88.20	−88.84	0.002	1.47	−88.57
73	126	0.142		−0.007	0.001		0.153		0.017	0.001	1.04	−87.41	−87.91	0.004	1.05	−87.80
74	127	−0.125		0.020	0.004		−0.130		−0.017	−0.001	0.35	−88.41	−88.99	0.004	0.37	−88.81
75	128	−0.117		0.020	0.007		−0.122		−0.018	−0.004	−0.31	−87.38	−87.74	0.004	−0.30	−87.79
76	129	−0.108		0.020	0.009		−0.113		−0.019	−0.006	−1.29	−88.19	−88.50	0.004	−1.27	−88.61
77	130	−0.100		0.027	0.010		−0.104		−0.027	−0.006	−2.13	−86.88	−86.93	0.004	−2.11	−87.30
78	131	−0.075		0.013	0.004		−0.079		−0.013	−0.003	−3.44	−87.55	−87.46	0.004	−3.43	−87.99
79	132	−0.067		0.013	0.005		−0.070		−0.013	−0.004	−4.56	−86.08	−85.71	0.011	−4.55	−86.52
80	133	0.008		0.000	0.003		0.008		0.000	−0.003	−6.14	−86.57	−85.89	0.026	−6.14	−87.03
81	134	0.025		0.007	0.001		0.027		−0.008	−0.001	−7.27	−84.68	−84.00	0.060	−7.27	−85.13
82	135	0.000		0.000	−0.002		0.000		0.000	0.002	−8.39	−84.28	−83.82	0.023	−8.39	−84.72
83	136	0.025		−0.013	−0.001		0.027		0.016	0.001	−7.74	−80.21	−79.57	0.040	−7.74	−80.64
84	137	0.008		0.000	0.003		0.008		0.000	−0.003	−6.61	−77.15	−76.50	0.028	−6.61	−77.57
85	138	0.092		−0.060	−0.014		0.100		0.077	0.023	−4.80	−71.50	−72.29	0.080	−4.60	−71.72
86	139	0.100		−0.060	−0.007		0.108		0.078	0.016	−3.87	−68.25	−68.87	0.120	−3.69	−68.46
87	140	0.117		−0.060	0.006		0.126		0.080	0.004	−2.97	−63.15			−2.79	−63.35
88	141	0.125	0.062	−0.060	0.011	0.012	0.135	−0.086	0.082	0.003	−2.22	−59.69			−1.96	−59.78
89	142	0.150	0.065	−0.067	0.013	0.019	0.163	−0.091	0.094	0.005	−1.46	−54.35			−1.13	−54.36
90	143	0.150		−0.067	0.018		0.161		0.093	−0.004	−0.96	−50.77			−0.67	−50.79
91	144	0.175	0.035	−0.080	0.017	0.000	0.189	−0.049	0.114	0.004	−0.48	−45.37			−0.06	−45.24
92	145	0.192		−0.087	0.000		0.209		0.126	0.026	−0.11	−41.55			0.44	−41.26
93	146	0.200		−0.087	0.008		0.217		0.127	0.019	0.05	−36.14			0.57	−35.84
94	147	0.200	0.015	−0.073	0.018	0.014	0.216	−0.021	0.109	0.004	0.43	−31.97			0.87	−31.73
95	148	0.200	0.022	−0.067	0.016	0.027	0.216	−0.030	0.102	0.004	0.51	−26.30			0.90	−26.07
96	149	0.208		−0.060	0.032		0.224		0.095	−0.014	0.78	−21.91			1.21	−21.60

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 53$ (I)																
97	150	0.217		−0.053	0.036		0.233		0.089	−0.019	0.88	−15.91			1.31	−15.55
98	151	0.217		−0.040	0.035		0.234		0.072	−0.022	1.10	−11.24			1.50	−10.88
99	152	0.225		−0.033	0.040		0.243		0.066	−0.028	0.97	−5.16			1.40	−4.72
100	153	0.217		−0.027	0.037		0.234		0.057	−0.028	1.20	−0.18			1.59	0.27
101	154	0.225		−0.013	0.038		0.244		0.041	−0.032	0.99	6.12			1.38	6.62
102	155	0.225		0.000	0.033		0.245		0.025	−0.031	1.16	11.34			1.51	11.86
103	156	0.242		0.013	0.042		0.265		0.014	−0.043	0.81	17.78			1.34	18.53
104	157	0.242		0.027	0.031		0.266		−0.004	−0.036	1.15	23.47			1.59	24.17
105	158	0.233		0.033	0.020		0.256		−0.014	−0.027	1.15	30.54			1.47	31.18
106	159	0.233		0.040	0.009		0.256		−0.024	−0.018	1.39	36.41			1.66	37.07
107	160	0.233		0.047	0.005		0.256		−0.033	−0.016	1.28	43.63			1.57	44.37
108	161	0.233		0.060	−0.001		0.257		−0.049	−0.013	1.43	49.67			1.79	50.56
109	162	0.233		0.067	−0.007		0.258		−0.058	−0.010	1.17	57.01			1.58	58.01
110	163	0.225		0.067	−0.013		0.248		−0.061	−0.003	1.16	63.16			1.60	64.25
111	164	0.225		0.080	−0.023		0.249		−0.077	0.003	0.83	70.68			1.43	72.00
112	165	0.175		0.040	−0.010		0.190		−0.036	0.002	0.90	77.16			1.11	78.17
113	166	0.175		0.047	−0.014		0.191		−0.045	0.005	0.46	84.81			0.73	85.95
114	167	0.158		0.047	−0.017		0.172		−0.047	0.009	0.24	91.25			0.53	92.50
115	168	0.150		0.060	−0.019		0.164		−0.064	0.009	−0.51	98.83			−0.09	100.28
116	169	0.142		0.053	−0.015		0.154		−0.056	0.007	−0.73	105.50			−0.40	106.96
117	170	0.133		0.053	−0.015		0.145		−0.057	0.007	−1.44	113.35			−1.10	114.89
118	171	0.117		0.047	−0.021		0.126		−0.052	0.015	−2.17	119.75			−1.83	121.38
119	172	−0.150		0.027	−0.009		−0.156		−0.021	0.013	−2.70	128.00			−2.53	129.54
120	173	−0.142		0.020	−0.012		−0.148		−0.014	0.014	−3.21	134.85			−3.04	136.47
121	174	−0.117		0.013	−0.009		−0.122		−0.009	0.010	−4.09	142.97			−3.99	144.61
122	175	−0.100		0.020	0.002		−0.105		−0.019	0.000	−4.84	149.80			−4.76	151.51
123	176	−0.075		0.020	0.005		−0.079		−0.021	−0.003	−6.42	157.41			−6.35	159.21
124	177	−0.058		0.027	0.010		−0.061		−0.030	−0.008	−7.36	164.26			−7.24	166.21
125	178	−0.033		0.007	0.002		−0.035		−0.008	−0.002	−8.95	172.08			−8.94	174.01
126	179	0.017		0.000	−0.003		0.018		0.000	0.003	−9.69	179.34			−9.68	181.37
$Z = 54$ (Xe)																
49	103	0.058		0.000	−0.001		0.062		0.001	0.001	−3.14	−5.29			−3.15	−4.62
50	104	0.042		−0.007	0.000		0.045		0.009	0.000	−4.22	−15.87			−4.22	−15.26
51	105	0.083		−0.040	−0.012		0.089		0.051	0.017	−3.40	−21.52			−3.39	−20.97
52	106	0.108		−0.047	−0.004		0.116		0.062	0.011	−2.73	−29.50			−2.72	−28.99
53	107	0.133		−0.047	0.009		0.142		0.065	0.000	−1.83	−34.24			−1.83	−33.81
54	108	0.142		−0.047	0.014		0.152		0.067	−0.005	−1.15	−41.38			−1.15	−40.99
55	109	0.150		−0.040	0.027		0.160		0.060	−0.019	−0.47	−45.02			−0.47	−44.70
56	110	0.158		−0.033	0.029		0.169		0.052	−0.022	0.12	−50.91			0.13	−50.64
57	111	0.175		−0.033	0.028		0.188		0.055	−0.020	0.78	−53.86			0.77	−53.65
58	112	0.175		−0.027	0.030		0.188		0.048	−0.023	1.18	−59.20	−59.92	0.330	1.19	−59.03
59	113	0.200		−0.027	0.029		0.215		0.052	−0.021	1.55	−61.76	−62.03	0.090	1.55	−61.64
60	114	0.200		−0.027	0.024		0.216		0.052	−0.016	1.89	−66.46			1.90	−66.39
61	115	0.225		−0.033	0.019		0.243		0.064	−0.007	2.07	−68.54			2.08	−68.51
62	116	0.217		−0.020	0.017		0.235		0.046	−0.010	2.38	−72.61			2.39	−72.63
63	117	0.233		−0.013	0.013		0.253		0.041	−0.007	2.56	−74.07			2.56	−74.14
64	118	0.225		−0.007	0.011		0.244		0.031	−0.007	2.69	−77.67			2.71	−77.77
65	119	0.233		0.007	0.005		0.254		0.015	−0.005	2.75	−78.66	−78.74	0.140	2.75	−78.80
66	120	0.225		0.013	0.004		0.245		0.006	−0.006	2.75	−81.79	−81.81	0.050	2.77	−81.96
67	121	0.242		0.027	−0.001		0.265		−0.008	−0.005	2.70	−82.30	−82.49	0.050	2.71	−82.51
68	122	0.217		0.020	0.000		0.236		−0.004	−0.004	2.59	−84.95	−84.99	0.150	2.61	−85.19
69	123	0.233		0.040	−0.007		0.255		−0.026	−0.002	2.42	−85.04	−85.25	0.015	2.44	−85.30
70	124	0.192		0.013	0.000		0.208		0.000	−0.002	2.34	−87.10	−87.66	0.002	2.37	−87.39
71	125	0.192		0.020	−0.001		0.209		−0.009	−0.002	2.06	−86.77	−87.19	0.002	2.08	−87.09
72	126	0.158		0.007	0.002		0.170		0.002	−0.003	1.86	−88.42	−89.17	0.006	1.88	−88.76
73	127	0.150		0.000	0.004		0.161		0.010	−0.003	1.51	−87.65	−88.32	0.004	1.53	−88.02
74	128	0.133		0.000	0.002		0.143		0.008	−0.002	1.01	−89.08	−89.86	0.002	1.03	−89.47

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 54$ (Xe)																
75	129	0.133		0.007	0.000		0.143		−0.001	−0.001	0.48	−88.02	−88.70	0.002	0.49	−88.43
76	130	−0.108		0.020	0.008		−0.113		−0.019	−0.005	−0.31	−89.24	−89.88	0.002	−0.29	−89.66
77	131	−0.108		0.027	0.012		−0.113		−0.027	−0.008	−1.11	−87.98	−88.43	0.004	−1.09	−88.41
78	132	0.000		0.000	0.000		0.000		0.000	0.000	−2.36	−89.20	−89.29	0.004	−2.37	−89.66
79	133	−0.017		0.007	−0.001		−0.018		−0.008	0.001	−3.59	−87.92	−87.66	0.005	−3.59	−88.39
80	134	0.000		0.000	0.000		0.000		0.000	0.000	−4.92	−88.75	−88.13	0.007	−4.92	−89.22
81	135	0.025		0.007	−0.002		0.027		−0.008	0.002	−6.10	−86.99	−86.50	0.011	−6.10	−87.47
82	136	0.000		0.000	−0.001		0.000		0.000	0.001	−7.20	−87.16	−86.43	0.007	−7.20	−87.64
83	137	−0.017		−0.007	0.000		−0.018		0.008	0.000	−6.62	−83.23	−82.38	0.007	−6.62	−83.70
84	138	0.000		0.000	−0.002		0.000		0.000	0.002	−5.35	−80.61	−80.11	0.040	−5.35	−81.07
85	139	0.092		−0.053	−0.015		0.100		0.068	0.023	−4.02	−75.52	−75.69	0.060	−3.86	−75.82
86	140	0.108		−0.053	−0.003		0.116		0.070	0.011	−3.01	−72.75	−72.99	0.060	−2.86	−73.06
87	141	0.125	0.061	−0.053	0.010	0.009	0.135	−0.085	0.073	0.002	−2.37	−67.98	−68.32	0.090	−2.16	−68.21
88	142	0.133	0.074	−0.053	0.010	0.016	0.145	−0.103	0.075	0.004	−1.76	−65.22	−65.50	0.100	−1.50	−65.39
89	143	0.150	0.084	−0.067	0.013	0.021	0.164	−0.117	0.095	0.007	−1.23	−60.19			−0.87	−60.23
90	144	0.167	0.062	−0.067	0.014	0.020	0.181	−0.086	0.097	0.005	−0.62	−57.05			−0.26	−57.08
91	145	0.192	0.034	−0.080	0.019	0.006	0.207	−0.047	0.117	0.005	−0.18	−51.75			0.25	−51.69
92	146	0.200		−0.093	0.002		0.218		0.135	0.027	0.02	−48.66			0.62	−48.40
93	147	0.208		−0.087	0.010		0.226		0.129	0.018	0.09	−43.39			0.62	−43.18
94	148	0.208		−0.073	0.018		0.224		0.111	0.005	0.44	−39.79			0.87	−39.64
95	149	0.217	0.018	−0.067	0.018	0.025	0.234	−0.025	0.105	0.004	0.55	−34.15			0.95	−34.00
96	150	0.225		−0.060	0.030		0.242		0.099	−0.010	0.88	−30.24			1.31	−30.02
97	151	0.225		−0.053	0.035		0.242		0.090	−0.017	0.84	−24.43			1.26	−24.18
98	152	0.233		−0.040	0.038		0.251		0.076	−0.024	1.09	−20.26			1.52	−19.97
99	153	0.233		−0.033	0.042		0.252		0.068	−0.030	0.92	−14.27			1.38	−13.92
100	154	0.233		−0.020	0.042		0.252		0.052	−0.034	1.05	−9.91			1.51	−9.51
101	155	0.242		−0.007	0.047		0.263		0.039	−0.042	0.74	−3.76			1.29	−3.22
102	156	0.242		0.007	0.045		0.264		0.022	−0.044	0.88	0.92			1.43	1.51
103	157	0.250		0.020	0.044		0.275		0.008	−0.047	0.70	7.48			1.30	8.16
104	158	0.250		0.027	0.034		0.275		−0.001	−0.039	1.07	12.69			1.55	13.31
105	159	0.242		0.033	0.024		0.266		−0.012	−0.031	1.06	19.70			1.43	20.26
106	160	0.233		0.040	0.012		0.256		−0.024	−0.021	1.37	25.14			1.67	25.67
107	161	0.233		0.047	0.009		0.257		−0.032	−0.020	1.26	32.32			1.57	32.93
108	162	0.233		0.060	0.004		0.257		−0.048	−0.018	1.44	37.90			1.83	38.65
109	163	0.233		0.067	−0.004		0.258		−0.058	−0.012	1.22	45.23			1.63	46.07
110	164	0.225		0.073	−0.010		0.249		−0.067	−0.008	1.29	50.99			1.78	51.95
111	165	0.225		0.080	−0.020		0.249		−0.077	0.000	1.01	58.50			1.58	59.63
112	166	0.192		0.053	−0.010		0.210		−0.049	−0.001	0.96	64.39			1.26	65.32
113	167	0.183		0.060	−0.016		0.200		−0.059	0.004	0.58	72.07			0.96	73.14
114	168	0.167		0.053	−0.013		0.182		−0.053	0.003	0.56	78.24			0.88	79.32
115	169	0.167		0.067	−0.024		0.183		−0.071	0.012	−0.02	85.94			0.50	87.30
116	170	0.150		0.060	−0.016		0.164		−0.064	0.006	−0.38	92.01			0.03	93.34
117	171	0.142		0.053	−0.013		0.155		−0.056	0.005	−0.90	100.01			−0.58	101.33
118	172	0.125		0.053	−0.020		0.136		−0.058	0.013	−1.31	106.28			−0.94	107.72
119	173	−0.150		0.027	−0.009		−0.156		−0.021	0.013	−2.09	114.25			−1.91	115.57
120	174	−0.150		0.020	−0.011		−0.156		−0.013	0.013	−2.49	120.75			−2.32	122.15
121	175	−0.117		0.013	−0.009		−0.122		−0.009	0.010	−3.42	128.77			−3.33	130.19
122	176	−0.092		0.020	0.002		−0.096		−0.020	0.000	−4.24	135.08			−4.17	136.56
123	177	−0.075		0.027	0.006		−0.079		−0.029	−0.003	−5.64	142.86			−5.53	144.46
124	178	−0.058		0.033	0.011		−0.061		−0.037	−0.008	−6.49	149.35			−6.33	151.10
125	179	−0.025		0.007	−0.009		−0.026		−0.008	0.009	−8.19	157.03			−8.15	158.75
126	180	0.017		0.000	−0.002		0.018		0.000	0.002	−8.73	164.04			−8.73	165.82
127	181	0.033		−0.013	−0.008		0.035		0.016	0.009	−7.95	174.40			−7.90	176.32
128	182	0.050		−0.027	−0.021		0.054		0.034	0.023	−6.62	183.49			−6.34	185.75
$Z = 55$ (Cs)																
51	106	0.100		−0.047	0.000		0.107		0.062	0.007	−2.31	−9.41			−2.31	−8.73
52	107	0.133		−0.047	0.012		0.142		0.066	−0.003	−1.80	−17.67			−1.80	−17.05

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 55 (Cs)																
53	108	0.150	0.039	−0.047	0.011	0.023	0.161	−0.054	0.068	0.000	−1.10	−23.33			−1.11	−22.79
54	109	0.150		−0.040	0.027		0.160		0.060	−0.019	−0.51	−30.69			−0.52	−30.19
55	110	0.167	0.075	−0.033	0.008	0.038	0.182	−0.103	0.054	0.004	−0.27	−35.75			−0.29	−35.33
56	111	0.175	0.075	−0.033	0.008	0.041	0.190	−0.104	0.056	0.005	0.16	−42.19			0.16	−41.82
57	112	0.192	0.064	−0.040	0.010	0.037	0.208	−0.088	0.067	0.005	0.84	−45.81			0.82	−45.51
58	113	0.192		−0.027	0.037		0.207		0.052	−0.029	1.36	−51.16	−51.66	0.330	1.36	−50.90
59	114	0.233		−0.047	0.024		0.252		0.084	−0.007	1.70	−54.42			1.68	−54.24
60	115	0.233		−0.040	0.024		0.252		0.075	−0.009	1.80	−59.48			1.80	−59.33
61	116	0.250		−0.040	0.019		0.271		0.079	−0.003	2.03	−62.19	−62.25	0.280	2.01	−62.10
62	117	0.242		−0.027	0.020		0.262		0.061	−0.009	2.30	−66.42	−66.24	0.170	2.30	−66.36
63	118	0.242		−0.020	0.020		0.263		0.052	−0.011	2.48	−68.53	−68.25	0.130	2.46	−68.54
64	119	0.233		−0.007	0.015		0.253		0.033	−0.011	2.66	−72.20	−72.22	0.100	2.66	−72.25
65	120	0.242		0.000	0.008		0.263		0.026	−0.005	2.68	−73.86	−73.80	0.070	2.67	−73.96
66	121	0.233		0.013	0.009		0.254		0.009	−0.010	2.69	−77.10	−77.09	0.050	2.69	−77.22
67	122	0.242		0.020	0.004		0.265		0.001	−0.007	2.59	−78.30	−78.12	0.040	2.59	−78.48
68	123	0.225		0.020	0.005		0.245		−0.002	−0.008	2.56	−80.98	−81.06	0.040	2.57	−81.18
69	124	0.233		0.040	−0.002		0.256		−0.025	−0.007	2.36	−81.73	−81.73	0.040	2.37	−81.97
70	125	0.200		0.020	0.005		0.218		−0.007	−0.008	2.45	−83.72	−84.11	0.016	2.47	−83.98
71	126	0.200		0.020	0.005		0.218		−0.007	−0.008	2.20	−83.98	−84.35	0.023	2.21	−84.28
72	127	0.175		0.013	0.008		0.189		−0.002	−0.010	2.05	−85.68	−86.25	0.012	2.07	−86.00
73	128	0.167		0.013	0.008		0.181		−0.003	−0.010	1.76	−85.48	−85.93	0.006	1.77	−85.83
74	129	0.150		0.007	0.009		0.162		0.002	−0.010	1.38	−86.88	−87.51	0.005	1.40	−87.25
75	130	0.150		0.013	0.005		0.162		−0.006	−0.007	0.89	−86.38	−86.85	0.008	0.91	−86.77
76	131	0.133		0.007	0.005		0.143		−0.001	−0.006	0.37	−87.43	−88.07	0.006	0.38	−87.84
77	132	0.117		0.007	0.003		0.126		−0.003	−0.004	−0.26	−86.60	−87.17	0.005	−0.25	−87.03
78	133	−0.100		0.020	0.008		−0.105		−0.019	−0.005	−1.28	−87.67	−88.08	0.005	−1.26	−88.11
79	134	−0.100		0.027	0.012		−0.104		−0.027	−0.008	−2.28	−86.75	−86.91	0.005	−2.26	−87.19
80	135	0.000		0.000	0.000		0.000		0.000	0.000	−3.90	−87.95	−87.66	0.007	−3.90	−88.43
81	136	0.033		0.007	−0.004		0.035		−0.008	0.004	−5.10	−86.81	−86.35	0.005	−5.10	−87.29
82	137	0.000		0.000	−0.001		0.000		0.000	0.001	−6.18	−87.03	−86.56	0.005	−6.18	−87.52
83	138	0.025		−0.013	−0.008		0.027		0.016	0.008	−5.68	−83.75	−82.89	0.022	−5.67	−84.24
84	139	0.000		0.000	−0.001		0.000		0.000	0.001	−4.31	−81.11	−80.71	0.007	−4.31	−81.60
85	140	0.108		−0.053	−0.003		0.116		0.070	0.011	−2.96	−76.57	−77.05	0.016	−2.84	−76.95
86	141	0.117	0.053	−0.053	0.009	0.007	0.126	−0.074	0.072	0.002	−2.28	−74.21	−74.47	0.016	−2.12	−74.53
87	142	0.133	0.082	−0.053	0.010	0.020	0.145	−0.114	0.075	0.005	−1.91	−70.26	−70.54	0.020	−1.69	−70.52
88	143	0.150	0.089	−0.047	0.011	0.031	0.164	−0.123	0.070	0.005	−1.32	−67.60	−67.75	0.028	−1.07	−67.82
89	144	0.158	0.096	−0.060	0.013	0.028	0.173	−0.133	0.088	0.008	−1.00	−63.32	−63.37	0.040	−0.67	−63.46
90	145	0.175	0.079	−0.067	0.014	0.022	0.190	−0.109	0.098	0.008	−0.42	−60.28	−60.22	0.050	−0.06	−60.36
91	146	0.200	0.052	−0.087	0.022	0.005	0.217	−0.072	0.128	0.006	0.04	−55.51	−55.71	0.070	0.50	−55.48
92	147	0.208		−0.093	0.004		0.227		0.137	0.026	0.21	−52.51	−52.32	0.110	0.75	−52.38
93	148	0.217		−0.087	0.010		0.236		0.131	0.019	0.26	−47.80	−47.60	0.360	0.74	−47.70
94	149	0.217	0.051	−0.080	0.022	0.016	0.235	−0.070	0.122	0.006	0.65	−44.23			1.15	−44.09
95	150	0.225	0.052	−0.073	0.021	0.023	0.244	−0.071	0.115	0.006	0.68	−39.19			1.14	−39.08
96	151	0.225	0.041	−0.060	0.017	0.029	0.244	−0.056	0.098	0.005	1.00	−35.35			1.38	−35.28
97	152	0.233		−0.053	0.034		0.251		0.092	−0.015	0.86	−30.17			1.25	−30.06
98	153	0.233		−0.040	0.039		0.251		0.076	−0.025	1.06	−26.10			1.47	−25.94
99	154	0.242		−0.033	0.043		0.262		0.070	−0.030	0.92	−20.61			1.35	−20.38
100	155	0.242		−0.020	0.045		0.262		0.054	−0.036	0.98	−16.37			1.45	−16.06
101	156	0.242		−0.007	0.052		0.263		0.040	−0.047	0.64	−10.76			1.22	−10.31
102	157	0.242		0.007	0.050		0.265		0.023	−0.049	0.76	−6.15			1.36	−5.64
103	158	0.250		0.020	0.047		0.275		0.009	−0.049	0.58	−0.09			1.19	0.47
104	159	0.242		0.027	0.038		0.266		−0.003	−0.043	0.95	5.07			1.46	5.58
105	160	0.242		0.040	0.025		0.267		−0.020	−0.034	1.02	11.66			1.41	12.10
106	161	0.233		0.040	0.017		0.256		−0.023	−0.026	1.27	16.99			1.59	17.41
107	162	0.233		0.053	0.013		0.257		−0.039	−0.025	1.20	23.72			1.55	24.22
108	163	0.233		0.060	0.008		0.258		−0.048	−0.022	1.40	29.27			1.78	29.87
109	164	0.233		0.067	0.000		0.258		−0.057	−0.016	1.22	36.17			1.62	36.83

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 55 (Cs)																
110	165	0.225		0.073	−0.006		0.249		−0.067	−0.011	1.33	41.91			1.79	42.69
111	166	0.225		0.080	−0.016		0.249		−0.076	−0.004	1.09	48.99			1.61	49.90
112	167	0.200		0.060	−0.007		0.220		−0.056	−0.006	0.99	54.79			1.34	55.58
113	168	0.192		0.060	−0.010		0.211		−0.057	−0.002	0.70	62.08			1.04	62.93
114	169	0.183		0.060	−0.010		0.201		−0.059	−0.002	0.65	68.18			1.00	69.11
115	170	0.175		0.067	−0.020		0.192		−0.069	0.007	0.16	75.50			0.61	76.61
116	171	0.158		0.067	−0.019		0.173		−0.071	0.007	−0.06	81.68			0.41	82.87
117	172	0.142		0.060	−0.014		0.155		−0.064	0.005	−0.77	89.03			−0.40	90.20
118	173	0.125		0.053	−0.020		0.136		−0.058	0.013	−1.09	95.35			−0.72	96.59
119	174	0.108		0.047	−0.018		0.117		−0.052	0.012	−1.99	102.74			−1.70	103.98
120	175	−0.150		0.020	−0.009		−0.156		−0.014	0.011	−2.01	109.59			−1.87	110.76
121	176	−0.117		0.013	−0.007		−0.122		−0.009	0.008	−2.92	117.18			−2.85	118.37
122	177	−0.092		0.020	0.003		−0.096		−0.020	−0.001	−3.71	123.50			−3.64	124.75
123	178	−0.075		0.027	0.007		−0.079		−0.029	−0.004	−5.11	130.82			−5.02	132.19
124	179	−0.058		0.033	0.011		−0.061		−0.037	−0.008	−5.97	137.28			−5.81	138.80
125	180	0.025		0.000	−0.003		0.027		0.000	0.003	−7.59	144.60			−7.58	146.05
126	181	0.017		0.000	−0.003		0.018		0.000	0.003	−8.24	151.48			−8.24	153.01
127	182	0.033		−0.007	−0.006		0.035		0.009	0.006	−7.40	161.46			−7.37	163.11
128	183	0.042		−0.013	−0.015		0.045		0.016	0.016	−6.22	170.38			−6.10	172.21
129	184	0.058		−0.033	−0.015		0.062		0.041	0.018	−5.24	180.69			−4.99	182.76
130	185	0.067	0.052	−0.047	0.006	−0.010	0.073	−0.072	0.060	0.001	−4.18	189.70			−3.74	192.04
Z = 56 (Ba)																
52	108	0.142		−0.047	0.006		0.152		0.067	0.004	−1.04	−7.99			−1.04	−7.22
53	109	0.158		−0.047	0.024		0.169		0.069	−0.014	−0.38	−13.81			−0.38	−13.12
54	110	0.167	0.054	−0.040	0.010	0.031	0.180	−0.074	0.062	0.002	−0.14	−22.22			−0.13	−21.58
55	111	0.183	0.073	−0.033	0.008	0.042	0.199	−0.101	0.057	0.005	0.26	−27.53			0.25	−26.97
56	112	0.192		−0.027	0.043		0.207		0.052	−0.035	0.93	−34.70			0.93	−34.19
57	113	0.208		−0.040	0.038		0.224		0.071	−0.026	1.47	−38.58			1.45	−38.15
58	114	0.225		−0.040	0.031		0.243		0.074	−0.017	1.65	−44.94			1.65	−44.56
59	115	0.250		−0.053	0.023		0.271		0.095	−0.002	1.82	−48.50			1.80	−48.19
60	116	0.258		−0.047	0.024		0.280		0.090	−0.005	1.77	−54.38			1.78	−54.11
61	117	0.267		−0.040	0.023		0.290		0.083	−0.005	1.97	−57.23			1.96	−57.04
62	118	0.267		−0.027	0.023		0.290		0.067	−0.010	2.22	−62.13			2.23	−61.98
63	119	0.267		−0.020	0.021		0.291		0.058	−0.010	2.41	−64.36			2.40	−64.27
64	120	0.258		−0.007	0.016		0.281		0.039	−0.010	2.60	−68.68			2.60	−68.63
65	121	0.267		0.007	0.013		0.292		0.024	−0.012	2.66	−70.41			2.66	−70.42
66	122	0.250		0.013	0.009		0.273		0.012	−0.010	2.65	−74.31			2.66	−74.35
67	123	0.250		0.027	0.004		0.274		−0.005	−0.009	2.57	−75.60			2.57	−75.70
68	124	0.250		0.033	0.001		0.274		−0.013	−0.008	2.51	−78.94			2.53	−79.07
69	125	0.250		0.047	−0.004		0.275		−0.030	−0.008	2.35	−79.75	−79.55	0.250	2.37	−79.92
70	126	0.233		0.040	0.000		0.256		−0.025	−0.009	2.33	−82.49			2.36	−82.68
71	127	0.225		0.040	−0.001		0.247		−0.027	−0.008	2.18	−82.75	−82.80	0.100	2.21	−82.98
72	128	0.200		0.027	0.005		0.218		−0.015	−0.010	2.20	−84.90	−85.47	0.018	2.22	−85.16
73	129	0.192		0.027	0.005		0.209		−0.017	−0.010	1.95	−84.75	−85.08	0.011	1.97	−85.05
74	130	0.158		0.013	0.008		0.171		−0.005	−0.010	1.76	−86.57	−87.29	0.007	1.78	−86.91
75	131	0.150		0.020	0.004		0.162		−0.014	−0.007	1.36	−86.07	−86.71	0.007	1.37	−86.44
76	132	0.133		0.013	0.003		0.143		−0.008	−0.005	0.93	−87.63	−88.45	0.008	0.95	−88.02
77	133	0.117		0.013	0.001		0.126		−0.010	−0.003	0.38	−86.80	−87.57	0.005	0.40	−87.22
78	134	−0.108		0.027	0.011		−0.113		−0.027	−0.007	−0.55	−88.38	−88.96	0.005	−0.52	−88.80
79	135	−0.108		0.033	0.015		−0.113		−0.034	−0.010	−1.45	−87.45	−87.87	0.005	−1.42	−87.88
80	136	0.000		0.000	−0.001		0.000		0.000	0.001	−3.01	−89.18	−88.90	0.005	−3.01	−89.66
81	137	0.033		0.007	−0.003		0.035		−0.008	0.003	−4.18	−88.09	−87.73	0.005	−4.18	−88.58
82	138	0.000		0.000	0.000		0.000		0.000	0.000	−5.29	−88.92	−88.27	0.005	−5.29	−89.42
83	139	−0.025		−0.007	0.000		−0.026		0.008	0.000	−4.66	−85.60	−84.92	0.005	−4.66	−86.11
84	140	0.000		0.000	0.000		0.000		0.000	0.000	−3.53	−83.76	−83.27	0.012	−3.53	−84.28
85	141	0.108		−0.053	−0.004		0.116		0.070	0.012	−2.16	−79.29	−79.73	0.021	−2.05	−79.69
86	142	0.125	0.060	−0.047	0.009	0.007	0.135	−0.083	0.066	0.002	−1.60	−77.60	−77.85	0.020	−1.45	−77.96

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 56$ (Ba)																
87	143	0.142	0.086	−0.047	0.010	0.021	0.155	−0.119	0.069	0.005	−1.33	−73.83	−73.98	0.028	−1.12	−74.14
88	144	0.150	0.091	−0.053	0.012	0.030	0.164	−0.126	0.078	0.006	−0.94	−71.92	−71.84	0.050	−0.66	−72.15
89	145	0.167	0.098	−0.060	0.013	0.028	0.183	−0.136	0.089	0.009	−0.57	−67.67	−68.13	0.070	−0.24	−67.84
90	146	0.183	0.077	−0.067	0.015	0.019	0.199	−0.107	0.100	0.008	−0.02	−65.20	−65.08	0.070	0.34	−65.33
91	147	0.200	0.039	−0.080	0.020	0.009	0.216	−0.054	0.119	0.005	0.20	−60.74	−61.49	0.090	0.58	−60.84
92	148	0.217		−0.087	0.010		0.236		0.131	0.019	0.35	−58.30			0.83	−58.29
93	149	0.225		−0.080	0.016		0.244		0.124	0.011	0.27	−53.78			0.70	−53.81
94	150	0.225		−0.073	0.021		0.243		0.115	0.004	0.58	−50.82			1.00	−50.84
95	151	0.233		−0.067	0.027		0.251		0.109	−0.004	0.53	−45.94			0.93	−45.96
96	152	0.242		−0.060	0.031		0.261		0.103	−0.009	0.87	−42.60			1.28	−42.57
97	153	0.242		−0.053	0.036		0.261		0.094	−0.017	0.76	−37.44			1.16	−37.40
98	154	0.242		−0.040	0.038		0.261		0.078	−0.023	0.96	−33.90			1.36	−33.84
99	155	0.250		−0.027	0.040		0.271		0.064	−0.028	0.77	−28.51			1.17	−28.42
100	156	0.250		−0.020	0.043		0.271		0.056	−0.033	0.87	−24.74			1.32	−24.56
101	157	0.250		−0.007	0.050		0.272		0.041	−0.044	0.51	−19.21			1.06	−18.90
102	158	0.250		0.007	0.053		0.274		0.025	−0.052	0.58	−15.16			1.24	−14.71
103	159	0.250		0.020	0.048		0.275		0.009	−0.050	0.46	−9.10			1.07	−8.65
104	160	0.250		0.027	0.039		0.275		−0.001	−0.044	0.82	−4.45			1.35	−4.04
105	161	0.250		0.033	0.028		0.275		−0.009	−0.035	0.86	2.06			1.25	2.38
106	162	0.242		0.040	0.020		0.267		−0.021	−0.029	1.16	6.95			1.51	7.27
107	163	0.242		0.053	0.015		0.268		−0.037	−0.027	1.12	13.66			1.49	14.05
108	164	0.242		0.060	0.011		0.268		−0.046	−0.026	1.37	18.78			1.78	19.26
109	165	0.233		0.067	0.005		0.258		−0.057	−0.021	1.19	25.62			1.61	26.16
110	166	0.233		0.073	−0.002		0.258		−0.065	−0.016	1.38	30.96			1.85	31.60
111	167	0.225		0.080	−0.012		0.249		−0.076	−0.007	1.14	38.01			1.65	38.75
112	168	0.217		0.080	−0.019		0.240		−0.078	0.000	1.17	43.45			1.72	44.29
113	169	0.200		0.073	−0.015		0.220		−0.072	−0.001	0.72	50.54			1.18	51.35
114	170	0.183		0.067	−0.012		0.201		−0.067	−0.001	0.80	56.29			1.22	57.12
115	171	0.175		0.073	−0.024		0.192		−0.077	0.010	0.34	63.62			0.87	64.62
116	172	0.167		0.073	−0.030		0.183		−0.079	0.016	0.19	69.40			0.81	70.56
117	173	0.150		0.067	−0.027		0.164		−0.073	0.016	−0.59	76.64			−0.06	77.78
118	174	0.133		0.060	−0.024		0.145		−0.066	0.015	−0.72	82.69			−0.27	83.82
119	175	0.117		0.047	−0.021		0.126		−0.052	0.015	−1.55	90.11			−1.24	91.17
120	176	−0.150		0.020	−0.011		−0.156		−0.013	0.013	−1.47	96.61			−1.32	97.59
121	177	−0.125		0.020	−0.007		−0.131		−0.016	0.009	−2.52	104.03			−2.42	105.04
122	178	−0.092		0.020	0.002		−0.096		−0.020	0.000	−3.07	110.13			−3.01	111.18
123	179	−0.075		0.027	0.006		−0.079		−0.029	−0.003	−4.45	117.45			−4.35	118.61
124	180	−0.058		0.033	0.011		−0.061		−0.037	−0.008	−5.26	123.51			−5.11	124.80
125	181	−0.017		0.000	0.011		−0.018		0.000	−0.011	−6.97	130.71			−6.93	131.97
126	182	0.017		0.000	−0.002		0.018		0.000	0.002	−7.39	137.38			−7.39	138.69
127	183	0.033		−0.007	−0.006		0.035		0.009	0.006	−6.59	147.29			−6.57	148.70
128	184	0.033		−0.013	−0.010		0.035		0.016	0.011	−5.59	155.59			−5.54	157.13
129	185	0.050		−0.033	−0.015		0.054		0.041	0.018	−4.57	165.93			−4.32	167.75
130	186	0.058	0.054	−0.040	0.005	−0.011	0.063	−0.074	0.051	0.000	−3.37	174.64			−3.02	176.66
131	187	0.092	0.075	−0.053	0.008	−0.006	0.101	−0.104	0.070	0.003	−3.32	184.20			−2.66	186.62
132	188	0.100	0.074	−0.067	0.012	−0.002	0.109	−0.103	0.088	0.002	−2.75	192.49			−1.85	195.23
133	189	0.125	0.095	−0.073	0.014	−0.006	0.137	−0.132	0.100	0.006	−3.04	201.88			−1.87	205.01
$Z = 57$ (La)																
53	110	0.183	0.045	−0.047	0.011	0.030	0.198	−0.062	0.074	0.003	0.06	−2.10			0.03	−1.28
54	111	0.192	0.055	−0.040	0.010	0.034	0.208	−0.076	0.067	0.004	0.31	−10.61			0.29	−9.86
55	112	0.200		−0.033	0.042		0.215		0.061	−0.032	0.86	−16.45			0.83	−15.78
56	113	0.217	0.061	−0.040	0.012	0.041	0.236	−0.084	0.072	0.004	0.94	−24.34			0.91	−23.73
57	114	0.233	0.054	−0.053	0.017	0.025	0.253	−0.074	0.092	0.004	1.25	−29.40			1.21	−28.87
58	115	0.250		−0.053	0.021		0.271		0.095	0.000	1.43	−36.14			1.41	−35.67
59	116	0.258		−0.053	0.023		0.280		0.097	−0.001	1.44	−40.53			1.39	−40.14
60	117	0.267		−0.053	0.025		0.290		0.100	−0.002	1.34	−46.59			1.32	−46.24
61	118	0.275		−0.047	0.032		0.298		0.095	−0.011	1.54	−50.10			1.50	−49.83

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 57 (La)																
62	119	0.275		−0.033	0.022		0.299		0.076	−0.006	1.76	−55.15			1.74	−54.92
63	120	0.283		−0.020	0.020		0.309		0.062	−0.008	2.06	−57.92			2.01	−57.77
64	121	0.275		−0.013	0.015		0.300		0.051	−0.006	2.28	−62.31			2.26	−62.19
65	122	0.275		0.000	0.021		0.301		0.036	−0.017	2.35	−64.68			2.32	−64.63
66	123	0.267		0.013	0.012		0.292		0.017	−0.013	2.38	−68.64			2.37	−68.62
67	124	0.267		0.027	0.005		0.293		−0.001	−0.010	2.37	−70.50			2.34	−70.55
68	125	0.258		0.027	0.003		0.283		−0.004	−0.008	2.36	−73.89			2.36	−73.97
69	126	0.258		0.040	−0.003		0.284		−0.020	−0.007	2.26	−75.27			2.25	−75.40
70	127	0.250		0.040	−0.002		0.275		−0.022	−0.008	2.33	−78.02			2.34	−78.17
71	128	0.242		0.040	−0.002		0.266		−0.023	−0.007	2.24	−78.84	−78.82	0.400	2.24	−79.04
72	129	0.208		0.020	0.005		0.226		−0.005	−0.008	2.34	−81.00	−81.36	0.050	2.35	−81.23
73	130	0.200		0.020	0.006		0.218		−0.007	−0.009	2.17	−81.38			2.18	−81.65
74	131	0.175		0.020	0.005		0.190		−0.011	−0.008	2.08	−83.21	−83.75	0.100	2.09	−83.50
75	132	0.158		0.027	0.001		0.171		−0.022	−0.005	1.74	−83.24	−83.74	0.050	1.75	−83.57
76	133	0.150		0.027	−0.001		0.162		−0.023	−0.003	1.36	−84.84			1.38	−85.20
77	134	0.133		0.027	−0.003		0.144		−0.025	−0.001	0.86	−84.57	−85.25	0.026	0.87	−84.95
78	135	0.100		0.013	−0.001		0.107		−0.011	0.000	0.18	−85.97	−86.67	0.011	0.19	−86.39
79	136	−0.117		0.040	0.017		−0.122		−0.041	−0.010	−0.67	−85.58	−86.03	0.070	−0.63	−85.99
80	137	0.000		0.000	0.000		0.000		0.000	0.000	−2.22	−87.39	−87.13	0.050	−2.22	−87.85
81	138	0.042		0.007	−0.002		0.045		−0.008	0.002	−3.37	−86.84	−86.53	0.005	−3.36	−87.32
82	139	0.000		0.000	−0.001		0.000		0.000	0.001	−4.50	−87.78	−87.24	0.004	−4.50	−88.28
83	140	−0.033		−0.007	0.000		−0.035		0.009	0.000	−3.76	−84.92	−84.33	0.004	−3.76	−85.43
84	141	0.000		0.000	0.000		0.000		0.000	0.000	−2.73	−83.26	−82.98	0.025	−2.73	−83.79
85	142	0.125		−0.053	−0.001		0.134		0.072	0.011	−1.32	−79.31	−80.03	0.007	−1.22	−79.74
86	143	0.142	0.075	−0.047	0.010	0.012	0.154	−0.104	0.068	0.004	−0.93	−77.87	−78.20	0.017	−0.76	−78.24
87	144	0.150	0.089	−0.053	0.012	0.024	0.164	−0.123	0.077	0.005	−0.78	−74.78	−74.94	0.060	−0.58	−75.11
88	145	0.158	0.092	−0.053	0.012	0.030	0.173	−0.128	0.079	0.007	−0.50	−73.05	−73.03	0.070	−0.26	−73.33
89	146	0.183	0.082	−0.060	0.014	0.032	0.199	−0.113	0.091	0.007	−0.02	−69.24	−69.18	0.070	0.24	−69.51
90	147	0.200	0.053	−0.073	0.018	0.015	0.217	−0.073	0.110	0.006	0.38	−66.98	−67.24	0.080	0.70	−67.20
91	148	0.208	0.030	−0.080	0.021	0.011	0.225	−0.042	0.120	0.004	0.26	−63.41	−63.81	0.150	0.60	−63.59
92	149	0.225		−0.087	0.014		0.244		0.133	0.016	0.32	−61.12			0.75	−61.21
93	150	0.225		−0.080	0.017		0.244		0.124	0.010	0.15	−57.23			0.52	−57.36
94	151	0.233		−0.073	0.024		0.252		0.117	0.002	0.43	−54.36			0.81	−54.47
95	152	0.242		−0.067	0.029		0.261		0.111	−0.005	0.37	−50.01			0.74	−50.13
96	153	0.242		−0.060	0.031		0.261		0.103	−0.009	0.67	−46.78			1.03	−46.87
97	154	0.250		−0.053	0.035		0.270		0.096	−0.015	0.56	−42.14			0.93	−42.21
98	155	0.250		−0.040	0.036		0.270		0.080	−0.020	0.79	−38.63			1.14	−38.70
99	156	0.250		−0.033	0.039		0.271		0.072	−0.025	0.63	−33.72			0.99	−33.75
100	157	0.250		−0.027	0.045		0.271		0.065	−0.033	0.74	−30.01			1.17	−29.93
101	158	0.250		−0.013	0.051		0.272		0.049	−0.044	0.38	−24.98			0.89	−24.81
102	159	0.258		0.007	0.053		0.283		0.027	−0.051	0.42	−21.02			1.04	−20.70
103	160	0.250		0.013	0.047		0.274		0.017	−0.047	0.38	−15.38			0.90	−15.12
104	161	0.250		0.020	0.038		0.274		0.007	−0.041	0.75	−10.77			1.19	−10.56
105	162	0.250		0.033	0.026		0.275		−0.010	−0.033	0.84	−4.70			1.18	−4.55
106	163	0.250		0.040	0.017		0.275		−0.019	−0.026	1.19	0.18			1.49	0.34
107	164	0.242		0.047	0.013		0.267		−0.030	−0.024	1.15	6.41			1.44	6.60
108	165	0.242		0.053	0.010		0.267		−0.037	−0.023	1.42	11.51			1.75	11.77
109	166	0.242		0.067	0.001		0.268		−0.055	−0.018	1.36	17.98			1.72	18.33
110	167	0.233		0.073	−0.007		0.258		−0.065	−0.011	1.52	23.25			1.93	23.70
111	168	0.225		0.080	−0.016		0.249		−0.076	−0.004	1.26	29.79			1.74	30.35
112	169	0.217		0.080	−0.022		0.240		−0.079	0.003	1.29	35.20			1.82	35.86
113	170	0.200		0.080	−0.020		0.221		−0.081	0.002	0.84	41.81			1.35	42.52
114	171	0.192		0.080	−0.019		0.212		−0.082	0.002	0.92	47.53			1.45	48.32
115	172	0.183		0.080	−0.025		0.201		−0.084	0.009	0.50	54.42			1.08	55.31
116	173	0.167		0.080	−0.032		0.183		−0.087	0.017	0.37	60.19			1.03	61.23
117	174	0.150		0.067	−0.027		0.164		−0.073	0.016	−0.38	67.00			0.11	67.93
118	175	0.133		0.060	−0.024		0.145		−0.066	0.015	−0.50	73.03			−0.07	73.96

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 57$ (La)																
119	176	0.117		0.053	−0.022		0.127		−0.059	0.015	−1.26	80.05			−0.92	80.97
120	177	−0.158		0.020	−0.009		−0.164		−0.013	0.011	−0.95	86.75			−0.81	87.53
121	178	−0.125		0.020	−0.007		−0.131		−0.016	0.009	−2.11	93.62			−2.01	94.43
122	179	−0.092		0.020	0.001		−0.096		−0.020	0.001	−2.65	99.69			−2.58	100.54
123	180	−0.067		0.027	0.005		−0.070		−0.030	−0.003	−4.07	106.52			−3.98	107.47
124	181	−0.058		0.033	0.010		−0.061		−0.037	−0.007	−4.82	112.62			−4.68	113.69
125	182	−0.025		0.007	0.012		−0.026		−0.008	−0.011	−6.41	119.49			−6.36	120.55
126	183	0.017		0.000	−0.003		0.018		0.000	0.003	−6.92	126.04			−6.92	127.14
127	184	0.025		−0.007	−0.005		0.027		0.009	0.005	−6.32	135.32			−6.31	136.51
128	185	0.033		−0.013	−0.008		0.035		0.016	0.009	−5.13	143.79			−5.08	145.10
129	186	0.050		−0.033	−0.014		0.054		0.041	0.017	−4.07	153.73			−3.85	155.29
130	187	0.058	0.063	−0.033	0.004	−0.009	0.063	−0.087	0.043	0.002	−2.98	162.31			−2.65	164.07
131	188	0.092	0.079	−0.053	0.008	−0.006	0.101	−0.110	0.070	0.004	−2.99	171.38			−2.35	173.54
132	189	0.100	0.075	−0.067	0.012	−0.002	0.109	−0.105	0.088	0.002	−2.37	179.70			−1.51	182.16
133	190	0.133	0.096	−0.080	0.015	−0.003	0.146	−0.134	0.109	0.008	−2.55	188.78			−1.30	191.74
134	191	0.150	0.102	−0.087	0.017	−0.016	0.165	−0.142	0.121	0.010	−1.95	197.28			−0.45	200.57
135	192	0.158		−0.093	−0.017		0.174		0.128	0.041	−2.08	206.60			−0.49	210.09
$Z = 58$ (Ce)																
55	113	0.217		−0.040	0.038		0.234		0.073	−0.025	1.04	−7.19			1.00	−6.36
56	114	0.242		−0.047	0.029		0.262		0.086	−0.011	1.32	−15.56			1.29	−14.79
57	115	0.250		−0.053	0.023		0.271		0.095	−0.002	1.40	−21.22			1.36	−20.55
58	116	0.258		−0.047	0.028		0.279		0.090	−0.009	1.28	−29.21			1.26	−28.59
59	117	0.275		−0.047	0.029		0.298		0.094	−0.008	1.19	−33.80			1.15	−33.28
60	118	0.283		−0.047	0.033		0.307		0.097	−0.011	1.05	−40.57			1.04	−40.08
61	119	0.283		−0.040	0.036		0.307		0.089	−0.017	1.17	−44.27			1.14	−43.87
62	120	0.283		−0.033	0.030		0.308		0.079	−0.013	1.36	−50.01			1.35	−49.66
63	121	0.292		−0.020	0.028		0.319		0.066	−0.015	1.60	−52.95			1.56	−52.68
64	122	0.283		−0.013	0.021		0.309		0.054	−0.012	1.83	−57.99			1.81	−57.76
65	123	0.283		0.000	0.017		0.310		0.037	−0.012	1.95	−60.41			1.92	−60.26
66	124	0.275		0.007	0.010		0.301		0.026	−0.008	2.06	−64.93			2.05	−64.82
67	125	0.275		0.020	0.003		0.302		0.009	−0.006	2.07	−66.87			2.05	−66.82
68	126	0.267		0.027	0.001		0.293		−0.002	−0.006	2.14	−70.82			2.14	−70.80
69	127	0.267		0.040	−0.007		0.294		−0.019	−0.003	2.10	−72.24			2.09	−72.29
70	128	0.250		0.040	−0.004		0.275		−0.022	−0.006	2.24	−75.54			2.25	−75.61
71	129	0.250		0.047	−0.007		0.275		−0.031	−0.005	2.22	−76.39			2.22	−76.51
72	130	0.225		0.033	0.000		0.246		−0.018	−0.007	2.32	−79.17			2.34	−79.32
73	131	0.200		0.033	0.001		0.218		−0.023	−0.008	2.36	−79.43	−79.73	0.410	2.37	−79.63
74	132	0.183		0.027	0.000		0.199		−0.018	−0.005	2.24	−81.89			2.25	−82.12
75	133	0.167		0.027	0.000		0.181		−0.021	−0.005	1.96	−81.96			1.97	−82.24
76	134	0.150		0.027	0.000		0.162		−0.023	−0.004	1.72	−84.02	−84.75	0.200	1.74	−84.33
77	135	0.133		0.027	−0.004		0.144		−0.025	0.000	1.29	−83.76	−84.64	0.012	1.30	−84.10
78	136	0.100		0.013	−0.001		0.107		−0.011	0.000	0.70	−85.67	−86.50	0.050	0.71	−86.04
79	137	−0.117		0.040	0.017		−0.122		−0.041	−0.010	−0.12	−85.32	−85.90	0.050	−0.08	−85.70
80	138	0.000		0.000	0.000		0.000		0.000	0.000	−1.57	−87.62	−87.57	0.011	−1.57	−88.06
81	139	0.042		0.007	−0.003		0.045		−0.008	0.003	−2.72	−87.15	−86.97	0.013	−2.72	−87.62
82	140	0.000		0.000	0.000		0.000		0.000	0.000	−3.86	−88.68	−88.09	0.004	−3.86	−89.16
83	141	−0.033		−0.007	0.000		−0.035		0.009	0.000	−3.11	−85.88	−85.44	0.003	−3.11	−86.38
84	142	0.000		0.000	0.000		0.000		0.000	0.000	−2.06	−84.78	−84.54	0.004	−2.07	−85.29
85	143	0.125		−0.047	−0.002		0.134		0.064	0.011	−0.79	−81.04	−81.62	0.004	−0.71	−81.48
86	144	0.133	0.059	−0.047	0.009	0.007	0.144	−0.082	0.066	0.002	−0.47	−80.23	−80.44	0.004	−0.34	−80.63
87	145	0.150	0.079	−0.047	0.011	0.020	0.163	−0.109	0.069	0.004	−0.30	−77.19	−77.11	0.040	−0.13	−77.57
88	146	0.167	0.084	−0.053	0.012	0.029	0.182	−0.116	0.080	0.006	−0.01	−76.00	−75.72	0.060	0.22	−76.32
89	147	0.192	0.064	−0.060	0.014	0.029	0.208	−0.088	0.092	0.006	0.40	−72.33	−72.18	0.050	0.63	−72.66
90	148	0.200		−0.073	0.019		0.216		0.109	0.002	0.60	−70.83	−70.43	0.120	0.88	−71.10
91	149	0.217		−0.080	0.018		0.235		0.122	0.008	0.31	−67.49	−66.80	0.080	0.64	−67.71
92	150	0.233		−0.080	0.019		0.252		0.126	0.009	0.31	−65.80	−64.99	0.120	0.70	−65.97
93	151	0.233		−0.080	0.023		0.252		0.126	0.005	0.06	−62.05			0.44	−62.22

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 58$ (Ce)																
94	152	0.242		−0.067	0.028		0.261		0.111	−0.003	0.28	−59.78			0.64	−59.96
95	153	0.250		−0.060	0.032		0.270		0.105	−0.009	0.16	−55.56			0.50	−55.74
96	154	0.250		−0.053	0.034		0.270		0.096	−0.014	0.40	−52.90			0.76	−53.05
97	155	0.250		−0.047	0.037		0.270		0.089	−0.019	0.24	−48.38			0.59	−48.53
98	156	0.250		−0.040	0.038		0.270		0.080	−0.022	0.45	−45.40			0.82	−45.51
99	157	0.250		−0.033	0.041		0.271		0.072	−0.027	0.29	−40.55			0.66	−40.65
100	158	0.250		−0.027	0.042		0.271		0.065	−0.030	0.46	−37.29			0.86	−37.33
101	159	0.258		−0.013	0.047		0.281		0.050	−0.039	0.11	−32.32			0.56	−32.27
102	160	0.258		0.000	0.045		0.282		0.034	−0.041	0.30	−28.70			0.77	−28.62
103	161	0.258		0.013	0.044		0.283		0.019	−0.044	0.14	−23.23			0.62	−23.11
104	162	0.250		0.020	0.036		0.274		0.007	−0.039	0.62	−19.01			1.02	−18.94
105	163	0.250		0.027	0.025		0.275		−0.003	−0.030	0.67	−13.04			0.97	−13.02
106	164	0.250		0.040	0.015		0.275		−0.019	−0.024	1.04	−8.62			1.33	−8.59
107	165	0.250		0.047	0.011		0.276		−0.028	−0.022	1.02	−2.43			1.30	−2.36
108	166	0.250		0.053	0.008		0.276		−0.036	−0.021	1.34	2.23			1.66	2.37
109	167	0.242		0.067	−0.001		0.268		−0.056	−0.016	1.23	8.61			1.58	8.83
110	168	0.233		0.073	−0.009		0.258		−0.066	−0.009	1.43	13.43			1.84	13.75
111	169	0.233		0.080	−0.021		0.258		−0.076	0.001	1.27	20.03			1.75	20.47
112	170	0.225		0.087	−0.030		0.249		−0.087	0.008	1.34	25.00			1.97	25.63
113	171	0.208		0.087	−0.028		0.230		−0.089	0.008	0.87	31.56			1.49	32.24
114	172	0.192		0.080	−0.026		0.211		−0.083	0.009	0.96	36.82			1.52	37.49
115	173	0.183		0.087	−0.032		0.202		−0.093	0.014	0.58	43.72			1.27	44.57
116	174	0.167		0.080	−0.036		0.183		−0.087	0.021	0.51	49.07			1.21	49.99
117	175	0.150		0.073	−0.031		0.164		−0.081	0.019	−0.16	55.93			0.43	56.79
118	176	0.142		0.067	−0.027		0.155		−0.074	0.016	−0.23	61.53			0.28	62.38
119	177	0.125		0.053	−0.023		0.135		−0.058	0.016	−0.62	68.90			−0.27	69.65
120	178	−0.158		0.020	−0.009		−0.164		−0.013	0.011	−0.51	74.94			−0.37	75.54
121	179	−0.125		0.013	−0.007		−0.130		−0.008	0.008	−1.57	81.87			−1.49	82.49
122	180	−0.092		0.020	0.001		−0.096		−0.020	0.001	−2.13	87.48			−2.07	88.14
123	181	−0.075		0.027	0.006		−0.079		−0.029	−0.003	−3.44	94.39			−3.35	95.15
124	182	−0.050		0.027	0.008		−0.052		−0.030	−0.006	−4.29	99.94			−4.20	100.77
125	183	−0.017		0.000	0.009		−0.018		0.000	−0.009	−5.85	106.82			−5.83	107.65
126	184	0.008		0.000	−0.005		0.008		0.000	0.005	−6.39	112.90			−6.38	113.80
127	185	−0.025		−0.007	0.010		−0.026		0.008	−0.010	−5.61	122.33			−5.57	123.34
128	186	−0.017		0.000	−0.006		−0.018		0.000	0.006	−4.65	130.13			−4.64	131.19
129	187	0.050		−0.033	−0.014		0.054		0.041	0.017	−3.40	140.24			−3.19	141.57
130	188	0.050	0.070	−0.033	0.004	−0.011	0.055	−0.096	0.043	0.002	−2.42	148.27			−2.07	149.83
131	189	0.092	0.082	−0.053	0.008	−0.009	0.101	−0.114	0.071	0.004	−2.48	157.28			−1.83	159.22
132	190	0.100	0.076	−0.067	0.012	−0.005	0.109	−0.106	0.088	0.002	−1.87	165.15			−1.02	167.37
133	191	0.133	0.095	−0.080	0.015	−0.006	0.146	−0.132	0.109	0.008	−1.97	174.31			−0.74	176.99
134	192	0.150		−0.087	−0.013		0.164		0.119	0.034	−0.94	182.80			0.35	185.64
135	193	0.158		−0.093	−0.014		0.174		0.128	0.038	−1.50	191.68			−0.01	194.81
136	194	0.175		−0.100	−0.009		0.192		0.140	0.038	−1.52	199.33			0.17	202.75
137	195	0.183		−0.093	−0.003		0.200		0.132	0.030	−1.70	208.78			−0.25	212.05
$Z = 59$ (Pr)																
56	115	0.250		−0.047	0.028		0.270		0.088	−0.010	1.03	−4.41			0.97	−3.52
57	116	0.258		−0.053	0.026		0.279		0.097	−0.004	1.00	−10.87			0.92	−10.08
58	117	0.267		−0.053	0.031		0.289		0.100	−0.009	0.74	−19.11			0.68	−18.38
59	118	0.275		−0.047	0.031		0.298		0.095	−0.010	0.59	−24.69			0.52	−24.05
60	119	0.283		−0.047	0.035		0.307		0.097	−0.013	0.40	−31.87			0.35	−31.28
61	120	0.292		−0.040	0.040		0.317		0.092	−0.020	0.42	−36.33			0.35	−35.83
62	121	0.292		−0.027	0.032		0.318		0.075	−0.017	0.61	−42.19			0.55	−41.74
63	122	0.292		−0.020	0.029		0.319		0.066	−0.016	0.86	−45.75			0.79	−45.39
64	123	0.292		−0.007	0.022		0.319		0.049	−0.014	1.15	−50.83			1.10	−50.52
65	124	0.292		0.000	0.018		0.320		0.040	−0.013	1.32	−53.85			1.26	−53.62
66	125	0.283		0.000	0.012		0.310		0.037	−0.008	1.49	−58.42			1.45	−58.22
67	126	0.283		0.013	0.005		0.310		0.020	−0.005	1.56	−60.93			1.51	−60.81

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 59$ (Pr)																
68	127	0.283		0.020	0.003		0.311		0.011	−0.006	1.66	−64.94			1.63	−64.86
69	128	0.275		0.033	−0.004		0.303		−0.008	−0.004	1.71	−66.90			1.67	−66.88
70	129	0.267		0.027	−0.002		0.293		−0.002	−0.004	1.87	−70.28			1.85	−70.28
71	130	0.258		0.033	−0.003		0.283		−0.012	−0.004	1.97	−71.62			1.95	−71.68
72	131	0.250		0.027	−0.002		0.274		−0.006	−0.004	2.20	−74.36			2.19	−74.46
73	132	0.217		0.027	0.002		0.237		−0.012	−0.007	2.21	−75.26			2.20	−75.41
74	133	0.200		0.027	0.002		0.218		−0.015	−0.007	2.26	−77.64			2.26	−77.82
75	134	0.175		0.033	−0.005		0.190		−0.027	−0.001	2.19	−78.10			2.19	−78.32
76	135	0.150		0.027	−0.005		0.162		−0.023	0.001	2.07	−80.13	−80.92	0.150	2.08	−80.39
77	136	0.142		0.033	−0.008		0.154		−0.032	0.003	1.63	−80.46	−81.37	0.050	1.64	−80.76
78	137	0.108		0.020	−0.004		0.116		−0.019	0.002	1.16	−82.35	−83.20	0.050	1.16	−82.68
79	138	−0.125		0.033	0.017		−0.130		−0.032	−0.011	0.39	−82.54	−83.14	0.015	0.41	−82.89
80	139	0.000		0.000	−0.001		0.000		0.000	0.001	−0.98	−84.83	−84.84	0.013	−0.98	−85.23
81	140	0.050		0.007	−0.003		0.053		−0.007	0.003	−2.07	−84.88	−84.70	0.007	−2.07	−85.31
82	141	0.000		0.000	−0.001		0.000		0.000	0.001	−3.26	−86.53	−86.03	0.003	−3.26	−86.99
83	142	−0.033		−0.007	0.000		−0.035		0.009	0.000	−2.51	−84.30	−83.80	0.003	−2.51	−84.78
84	143	0.000		0.000	0.000		0.000		0.000	0.000	−1.47	−83.28	−83.08	0.003	−1.47	−83.78
85	144	0.133	0.038	−0.047	0.009	−0.003	0.143	−0.053	0.066	0.001	−0.34	−80.25	−80.76	0.004	−0.26	−80.68
86	145	0.150	0.045	−0.047	0.011	0.011	0.162	−0.062	0.068	0.001	0.08	−79.41	−79.64	0.008	0.19	−79.83
87	146	0.167	0.062	−0.053	0.012	0.024	0.181	−0.086	0.079	0.004	0.20	−76.97	−76.75	0.060	0.34	−77.38
88	147	0.192	0.072	−0.060	0.014	0.030	0.209	−0.099	0.092	0.007	0.55	−75.79	−75.47	0.040	0.77	−76.13
89	148	0.200		−0.067	0.030		0.215		0.102	−0.011	0.65	−72.98	−72.49	0.220	0.86	−73.33
90	149	0.208		−0.073	0.022		0.224		0.111	0.000	0.54	−71.86	−70.99	0.011	0.79	−72.18
91	150	0.225		−0.080	0.023		0.243		0.124	0.004	0.22	−69.09	−68.00	0.080	0.51	−69.37
92	151	0.242		−0.080	0.025		0.262		0.128	0.004	0.22	−67.47			0.57	−67.70
93	152	0.242		−0.073	0.027		0.262		0.119	0.000	−0.08	−64.31			0.22	−64.57
94	153	0.250		−0.067	0.032		0.270		0.114	−0.007	0.06	−62.17			0.40	−62.41
95	154	0.250		−0.060	0.033		0.270		0.105	−0.010	−0.09	−58.51			0.21	−58.76
96	155	0.250		−0.053	0.035		0.270		0.096	−0.015	0.13	−55.93			0.45	−56.16
97	156	0.250		−0.047	0.037		0.270		0.089	−0.019	−0.02	−51.91			0.29	−52.15
98	157	0.250		−0.040	0.038		0.270		0.080	−0.022	0.20	−48.99			0.53	−49.20
99	158	0.250		−0.033	0.041		0.271		0.072	−0.027	0.06	−44.64			0.38	−44.83
100	159	0.258		−0.027	0.042		0.280		0.067	−0.030	0.12	−41.53			0.49	−41.67
101	160	0.258		−0.013	0.044		0.281		0.050	−0.036	−0.10	−36.93			0.27	−37.04
102	161	0.258		−0.007	0.043		0.281		0.042	−0.037	0.12	−33.35			0.51	−33.41
103	162	0.258		0.000	0.043		0.282		0.034	−0.039	−0.02	−28.36			0.37	−28.40
104	163	0.258		0.013	0.034		0.283		0.017	−0.034	0.35	−24.30			0.69	−24.37
105	164	0.250		0.020	0.025		0.274		0.006	−0.028	0.53	−18.68			0.78	−18.82
106	165	0.250		0.027	0.016		0.274		−0.004	−0.021	0.88	−14.34			1.10	−14.47
107	166	0.250		0.040	0.011		0.275		−0.020	−0.020	0.91	−8.58			1.14	−8.68
108	167	0.250		0.047	0.008		0.276		−0.029	−0.019	1.26	−3.95			1.51	−3.97
109	168	0.250		0.060	−0.001		0.277		−0.045	−0.014	1.23	2.04			1.52	2.08
110	169	0.242		0.067	−0.010		0.268		−0.057	−0.007	1.47	6.85			1.81	6.98
111	170	0.233		0.080	−0.023		0.258		−0.076	0.003	1.34	13.00			1.79	13.29
112	171	0.225		0.087	−0.033		0.249		−0.087	0.011	1.44	17.96			2.05	18.45
113	172	0.217		0.093	−0.039		0.240		−0.096	0.016	1.11	24.18			1.82	24.82
114	173	0.192		0.087	−0.033		0.212		−0.092	0.014	1.03	29.23			1.68	29.86
115	174	0.183		0.093	−0.037		0.202		−0.101	0.018	0.69	35.70			1.46	36.49
116	175	0.167		0.087	−0.041		0.183		−0.096	0.025	0.65	41.05			1.44	41.91
117	176	0.150		0.080	−0.036		0.164		−0.089	0.022	0.04	47.50			0.70	48.29
118	177	0.142		0.073	−0.031		0.155		−0.081	0.019	−0.04	53.07			0.53	53.82
119	178	0.125		0.060	−0.026		0.136		−0.067	0.018	−0.40	60.01			0.01	60.66
120	179	−0.167		0.013	−0.008		−0.173		−0.003	0.009	−0.26	66.04			−0.15	66.46
121	180	−0.133		0.013	−0.006		−0.139		−0.008	0.007	−1.25	72.60			−1.18	73.03
122	181	−0.100		0.020	0.001		−0.105		−0.019	0.001	−1.71	78.28			−1.64	78.76
123	182	−0.075		0.027	0.005		−0.079		−0.029	−0.002	−3.10	84.66			−3.02	85.23
124	183	−0.058		0.027	0.009		−0.061		−0.030	−0.007	−3.91	90.22			−3.82	90.86

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 59 (Pr)																
125	184	−0.025		0.007	0.010		−0.026		−0.008	−0.010	−5.40	96.72			−5.37	97.38
126	185	0.008		0.000	0.010		0.008		0.000	−0.010	−5.96	102.75			−5.93	103.48
127	186	−0.025		−0.007	0.009		−0.026		0.008	−0.009	−5.20	111.73			−5.17	112.53
128	187	−0.025		−0.007	0.010		−0.026		0.008	−0.010	−4.13	119.62			−4.09	120.50
129	188	0.050	0.055	−0.033	0.004	−0.013	0.054	−0.075	0.042	0.001	−2.95	129.22			−2.71	130.38
130	189	0.050	0.078	−0.033	0.004	−0.009	0.056	−0.107	0.043	0.003	−2.14	137.07			−1.75	138.44
131	190	0.092	0.088	−0.053	0.008	−0.009	0.101	−0.122	0.071	0.005	−2.26	145.58			−1.60	147.31
132	191	0.108	0.082	−0.067	0.012	−0.004	0.118	−0.114	0.090	0.004	−1.62	153.46			−0.78	155.44
133	192	0.150	0.096	−0.080	0.015	0.001	0.165	−0.134	0.112	0.010	−1.20	162.71			−0.02	165.12
134	193	0.158		−0.087	−0.008		0.173		0.120	0.030	−0.65	170.70			0.52	173.19
135	194	0.167		−0.093	−0.007		0.183		0.129	0.032	−1.21	179.17			0.12	181.91
136	195	0.183		−0.093	−0.006		0.200		0.132	0.033	−1.15	186.87			0.26	189.77
137	196	0.192		−0.093	0.003		0.209		0.134	0.025	−1.48	195.76			−0.15	198.67
138	197	0.192		−0.087	0.007		0.208		0.126	0.019	−1.31	203.76			−0.11	206.64
139	198	0.200	0.011	−0.087	0.022	0.012	0.216	−0.015	0.128	0.004	−1.58	212.89			−0.36	215.87
Z = 60 (Nd)																
58	118	0.283		−0.047	0.035		0.307		0.097	−0.013	0.45	−10.69			0.40	−9.78
59	119	0.292		−0.040	0.035		0.318		0.091	−0.015	0.27	−16.66			0.19	−15.87
60	120	0.300		−0.040	0.039		0.327		0.094	−0.018	0.00	−24.83			−0.05	−24.08
61	121	0.300		−0.033	0.043		0.327		0.086	−0.024	0.03	−29.40			−0.04	−28.75
62	122	0.300		−0.027	0.038		0.327		0.078	−0.022	0.22	−35.90			0.17	−35.30
63	123	0.300		−0.020	0.035		0.328		0.069	−0.022	0.48	−39.56			0.42	−39.06
64	124	0.300		−0.013	0.030		0.328		0.059	−0.019	0.76	−45.30			0.72	−44.84
65	125	0.300		0.000	0.022		0.329		0.043	−0.016	0.99	−48.36			0.94	−47.99
66	126	0.300		0.000	0.018		0.329		0.042	−0.013	1.18	−53.54			1.14	−53.21
67	127	0.292		0.013	0.008		0.321		0.023	−0.008	1.27	−56.13			1.22	−55.89
68	128	0.292		0.020	0.005		0.321		0.014	−0.008	1.40	−60.75			1.38	−60.54
69	129	0.292		0.033	−0.002		0.322		−0.003	−0.005	1.44	−62.80			1.41	−62.67
70	130	0.283		0.027	0.000		0.311		0.002	−0.005	1.64	−66.76			1.62	−66.67
71	131	0.275		0.033	−0.005		0.303		−0.008	−0.003	1.77	−68.17			1.75	−68.14
72	132	0.267		0.027	−0.004		0.293		−0.002	−0.002	2.03	−71.49			2.03	−71.49
73	133	0.217		0.033	−0.004		0.237		−0.020	−0.003	2.32	−72.20			2.31	−72.26
74	134	0.200		0.033	−0.005		0.218		−0.023	−0.002	2.41	−75.13			2.42	−75.23
75	135	0.183		0.033	−0.011		0.199		−0.027	0.005	2.30	−75.73			2.30	−75.88
76	136	0.158		0.033	−0.008		0.171		−0.030	0.002	2.21	−78.32	−79.16	0.060	2.22	−78.51
77	137	0.142		0.033	−0.009		0.154		−0.032	0.004	1.90	−78.62	−79.51	0.070	1.91	−78.85
78	138	−0.133		0.033	0.014		−0.138		−0.031	−0.008	1.50	−81.01			1.52	−81.27
79	139	−0.125		0.040	0.017		−0.130		−0.040	−0.010	0.72	−81.30	−82.06	0.040	0.74	−81.59
80	140	0.000		0.000	0.000		0.000		0.000	0.000	−0.58	−84.10	−84.47	0.020	−0.58	−84.46
81	141	0.042		0.007	−0.003		0.045		−0.008	0.003	−1.73	−84.29	−84.20	0.004	−1.73	−84.68
82	142	0.000		0.000	0.000		0.000		0.000	0.000	−2.88	−86.48	−85.96	0.003	−2.88	−86.89
83	143	−0.033		−0.007	0.000		−0.035		0.009	0.000	−2.14	−84.33	−84.01	0.003	−2.14	−84.78
84	144	0.000		0.000	0.000		0.000		0.000	0.000	−1.04	−83.82	−83.76	0.003	−1.04	−84.29
85	145	0.125		−0.047	−0.006		0.134		0.064	0.015	0.10	−80.85	−81.44	0.003	0.17	−81.27
86	146	0.150	0.031	−0.047	0.011	0.008	0.161	−0.043	0.068	0.000	0.56	−80.52	−80.94	0.003	0.66	−80.94
87	147	0.167	0.056	−0.047	0.011	0.021	0.181	−0.077	0.071	0.003	0.63	−78.22	−78.16	0.003	0.75	−78.63
88	148	0.192		−0.053	0.028		0.206		0.083	−0.013	0.85	−77.71	−77.42	0.003	1.01	−78.10
89	149	0.200		−0.060	0.029		0.215		0.093	−0.012	0.76	−75.16	−74.39	0.003	0.95	−75.54
90	150	0.225		−0.067	0.025		0.243		0.107	−0.003	0.54	−74.70	−73.69	0.004	0.78	−75.03
91	151	0.233		−0.073	0.025		0.252		0.117	0.001	0.19	−72.02	−70.96	0.004	0.45	−72.34
92	152	0.242		−0.080	0.026		0.262		0.128	0.003	0.11	−71.02	−70.16	0.030	0.46	−71.26
93	153	0.250		−0.073	0.031		0.270		0.121	−0.003	−0.17	−67.89			0.16	−68.16
94	154	0.250		−0.067	0.034		0.270		0.114	−0.009	−0.13	−66.40			0.21	−66.65
95	155	0.258		−0.060	0.037		0.279		0.107	−0.013	−0.30	−62.80			0.03	−63.07
96	156	0.258		−0.053	0.038		0.279		0.098	−0.017	−0.15	−60.82			0.20	−61.07
97	157	0.258		−0.047	0.040		0.279		0.091	−0.021	−0.33	−56.90			0.00	−57.15
98	158	0.258		−0.040	0.040		0.279		0.082	−0.023	−0.16	−54.54			0.19	−54.78

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 60 (Nd)																
99	159	0.258		−0.033	0.042		0.280		0.074	−0.028	−0.33	−50.28			0.01	−50.50
100	160	0.267		−0.027	0.043		0.290		0.069	−0.030	−0.24	−47.66			0.14	−47.83
101	161	0.267		−0.013	0.046		0.291		0.052	−0.038	−0.53	−43.19			−0.14	−43.33
102	162	0.275		−0.007	0.049		0.300		0.048	−0.042	−0.41	−40.19			0.07	−40.25
103	163	0.275		0.007	0.042		0.302		0.030	−0.040	−0.49	−35.20			−0.08	−35.30
104	164	0.267		0.013	0.034		0.293		0.019	−0.034	−0.02	−31.54			0.33	−31.68
105	165	0.258		0.020	0.024		0.283		0.008	−0.027	0.20	−25.93			0.46	−26.14
106	166	0.250		0.033	0.014		0.275		−0.011	−0.021	0.71	−21.93			0.94	−22.14
107	167	0.250		0.040	0.009		0.275		−0.020	−0.018	0.72	−16.24			0.94	−16.43
108	168	0.250		0.053	0.005		0.276		−0.036	−0.018	1.08	−12.08			1.35	−12.18
109	169	0.250		0.067	−0.005		0.277		−0.054	−0.012	1.07	−6.12			1.39	−6.15
110	170	0.242		0.073	−0.014		0.268		−0.064	−0.005	1.35	−1.75			1.72	−1.69
111	171	0.233		0.080	−0.024		0.258		−0.076	0.004	1.20	4.34			1.65	4.52
112	172	0.225		0.087	−0.034		0.249		−0.087	0.012	1.32	8.84			1.91	9.20
113	173	0.217		0.093	−0.039		0.240		−0.096	0.016	1.01	15.04			1.72	15.56
114	174	0.200		0.087	−0.036		0.221		−0.091	0.016	0.99	19.68			1.64	20.18
115	175	0.192		0.093	−0.041		0.212		−0.100	0.021	0.69	26.15			1.47	26.82
116	176	0.175		0.087	−0.043		0.192		−0.096	0.026	0.69	31.07			1.48	31.80
117	177	0.158		0.080	−0.038		0.173		−0.089	0.024	0.29	37.70			0.97	38.37
118	178	0.142		0.067	−0.031		0.155		−0.074	0.020	0.17	42.76			0.66	43.30
119	179	−0.175		0.013	−0.007		−0.182		−0.002	0.008	0.39	50.26			0.50	50.46
120	180	−0.167		0.020	−0.008		−0.174		−0.011	0.011	0.01	55.31			0.14	55.60
121	181	−0.142		0.020	−0.004		−0.148		−0.015	0.007	−0.87	61.95			−0.77	62.24
122	182	−0.100		0.020	0.001		−0.105		−0.019	0.001	−1.33	67.17			−1.27	67.49
123	183	−0.075		0.027	0.005		−0.079		−0.029	−0.002	−2.69	73.55			−2.61	73.95
124	184	−0.058		0.027	0.009		−0.061		−0.030	−0.007	−3.50	78.66			−3.41	79.13
125	185	−0.017		0.000	0.005		−0.018		0.000	−0.005	−5.00	85.13			−4.99	85.58
126	186	0.008		0.000	0.010		0.008		0.000	−0.010	−5.48	90.81			−5.45	91.35
127	187	−0.025		−0.007	0.005		−0.026		0.008	−0.005	−4.70	99.77			−4.68	100.36
128	188	−0.017		0.000	0.007		−0.018		0.000	−0.007	−3.74	107.12			−3.72	107.78
129	189	0.050	0.065	−0.033	0.004	−0.013	0.055	−0.089	0.042	0.001	−2.56	116.69			−2.27	117.69
130	190	0.050	0.081	−0.033	0.004	−0.010	0.056	−0.111	0.043	0.003	−1.79	124.06			−1.40	125.25
131	191	0.092	0.090	−0.053	0.008	−0.012	0.102	−0.125	0.071	0.005	−1.72	132.73			−1.07	134.26
132	192	0.108	0.081	−0.067	0.012	−0.006	0.118	−0.113	0.089	0.003	−1.03	140.25			−0.22	142.00
133	193	0.150	0.092	−0.080	0.015	0.000	0.164	−0.128	0.111	0.009	−0.67	149.41			0.46	151.56
134	194	0.167		−0.087	−0.005		0.182		0.121	0.028	−0.21	156.90			0.92	159.12
135	195	0.183		−0.093	0.001		0.199		0.132	0.026	−0.56	165.55			0.69	167.98
136	196	0.192		−0.093	−0.001		0.210		0.134	0.029	−0.59	172.75			0.76	175.36
137	197	0.192		−0.093	0.004		0.209		0.134	0.024	−1.05	181.49			0.25	184.12
138	198	0.200		−0.087	0.011		0.217		0.127	0.015	−0.90	189.06			0.29	191.68
139	199	0.200	0.010	−0.087	0.022	0.014	0.216	−0.014	0.128	0.004	−1.22	198.12			−0.02	200.83
140	200	0.200	0.019	−0.087	0.022	0.019	0.216	−0.026	0.128	0.004	−1.10	205.85			0.14	208.70
141	201	0.208	0.011	−0.080	0.021	0.023	0.225	−0.015	0.120	0.004	−1.51	215.01			−0.40	217.81
Z = 61 (Pm)																
59	120	0.300		−0.033	0.042		0.327		0.086	−0.023	−0.02	−5.91			−0.14	−4.98
60	121	0.300		−0.033	0.045		0.327		0.086	−0.026	−0.34	−14.24			−0.43	−13.36
61	122	0.300		−0.033	0.050		0.327		0.087	−0.031	−0.36	−19.75			−0.47	−18.98
62	123	0.300		−0.027	0.046		0.327		0.079	−0.030	−0.19	−26.63			−0.27	−25.90
63	124	0.300		−0.020	0.043		0.328		0.070	−0.029	0.07	−30.93			−0.03	−30.31
64	125	0.300		−0.013	0.036		0.328		0.060	−0.025	0.35	−36.77			0.28	−36.20
65	126	0.300		−0.007	0.032		0.329		0.052	−0.024	0.56	−40.49			0.47	−40.01
66	127	0.300		0.000	0.025		0.329		0.043	−0.019	0.79	−45.73			0.72	−45.30
67	128	0.300		0.013	0.015		0.330		0.026	−0.015	0.92	−48.91			0.83	−48.57
68	129	0.300		0.013	0.015		0.330		0.026	−0.015	1.07	−53.60			1.02	−53.30
69	130	0.300		0.027	0.004		0.331		0.007	−0.009	1.12	−56.27			1.05	−56.05
70	131	0.300		0.020	0.007		0.330		0.016	−0.009	1.33	−60.30			1.29	−60.12
71	132	0.300		0.027	0.000		0.331		0.007	−0.005	1.41	−62.37			1.35	−62.27

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 61 (Pm)																
72	133	0.292		0.020	0.003		0.321		0.013	−0.006	1.73	−65.72			1.70	−65.65
73	134	0.292		0.013	0.005		0.321		0.022	−0.005	1.99	−67.06			1.95	−67.06
74	135	0.283		0.007	0.007		0.310		0.027	−0.005	2.30	−69.88			2.28	−69.90
75	136	0.200		0.033	−0.008		0.218		−0.024	0.001	2.17	−71.07			2.16	−71.15
76	137	0.175		0.033	−0.011		0.190		−0.028	0.005	2.23	−73.61	−73.83	0.150	2.23	−73.72
77	138	0.150		0.033	−0.012		0.162		−0.031	0.007	2.12	−74.29			2.12	−74.45
78	139	−0.142		0.027	0.012		−0.148		−0.023	−0.007	1.77	−76.71	−77.53	0.050	1.78	−76.92
79	140	−0.142		0.040	0.019		−0.147		−0.038	−0.011	1.09	−77.48	−78.38	0.040	1.10	−77.72
80	141	0.000		0.000	0.000		0.000		0.000	0.000	−0.15	−80.31	−80.47	0.029	−0.15	−80.60
81	142	0.042		0.007	−0.003		0.045		−0.008	0.003	−1.24	−81.01	−81.09	0.040	−1.24	−81.34
82	143	0.000		0.000	0.000		0.000		0.000	0.000	−2.45	−83.33	−82.97	0.004	−2.45	−83.70
83	144	−0.033		−0.007	0.000		−0.035		0.009	0.000	−1.70	−81.75	−81.43	0.004	−1.70	−82.14
84	145	0.000		0.000	0.000		0.000		0.000	0.000	−0.61	−81.31	−81.28	0.004	−0.61	−81.74
85	146	0.142		−0.040	−0.004		0.153		0.058	0.012	0.51	−78.92	−79.46	0.005	0.56	−79.33
86	147	0.150		−0.040	0.004		0.161		0.059	0.005	0.86	−78.78	−79.05	0.003	0.92	−79.21
87	148	0.175	0.049	−0.047	0.011	0.019	0.189	−0.067	0.072	0.003	0.85	−77.10	−76.88	0.007	0.95	−77.51
88	149	0.200	0.039	−0.047	0.012	0.028	0.216	−0.054	0.077	0.003	0.98	−76.77	−76.07	0.005	1.09	−77.18
89	150	0.208		−0.053	0.033		0.224		0.086	−0.017	0.86	−74.78	−73.61	0.020	1.01	−75.18
90	151	0.233		−0.060	0.031		0.251		0.101	−0.010	0.60	−74.42	−73.40	0.006	0.80	−74.79
91	152	0.242		−0.067	0.032		0.261		0.112	−0.008	0.24	−72.29	−71.27	0.070	0.47	−72.65
92	153	0.250		−0.073	0.033		0.270		0.121	−0.005	0.12	−71.40	−70.67	0.016	0.41	−71.70
93	154	0.250		−0.067	0.036		0.270		0.114	−0.011	−0.22	−68.87	−68.41	0.110	0.05	−69.20
94	155	0.258		−0.060	0.041		0.279		0.107	−0.017	−0.22	−67.47			0.08	−67.77
95	156	0.258		−0.060	0.044		0.279		0.108	−0.020	−0.43	−64.44			−0.11	−64.74
96	157	0.267		−0.047	0.045		0.289		0.094	−0.025	−0.36	−62.61			−0.03	−62.89
97	158	0.267		−0.040	0.046		0.289		0.085	−0.028	−0.59	−59.24			−0.27	−59.54
98	159	0.267		−0.033	0.046		0.290		0.077	−0.031	−0.49	−57.02			−0.15	−57.29
99	160	0.267		−0.027	0.047		0.290		0.069	−0.034	−0.71	−53.31			−0.37	−53.58
100	161	0.275		−0.020	0.048		0.299		0.063	−0.037	−0.64	−50.77			−0.25	−50.98
101	162	0.275		−0.007	0.050		0.300		0.048	−0.043	−0.92	−46.78			−0.51	−46.96
102	163	0.283		0.000	0.054		0.310		0.042	−0.049	−0.80	−43.86			−0.29	−43.93
103	164	0.275		0.007	0.047		0.302		0.031	−0.045	−0.86	−39.34			−0.44	−39.48
104	165	0.275		0.013	0.039		0.302		0.022	−0.039	−0.42	−35.76			−0.06	−35.95
105	166	0.267		0.020	0.028		0.293		0.010	−0.031	−0.17	−30.61			0.09	−30.88
106	167	0.258		0.027	0.019		0.283		−0.002	−0.024	0.35	−26.65			0.57	−26.93
107	168	0.250		0.040	0.008		0.275		−0.020	−0.017	0.52	−21.28			0.71	−21.58
108	169	0.250		0.047	0.005		0.276		−0.029	−0.016	0.87	−17.19			1.09	−17.43
109	170	0.250		0.060	−0.004		0.276		−0.046	−0.011	0.87	−11.70			1.12	−11.88
110	171	0.250		0.067	−0.013		0.277		−0.056	−0.005	1.20	−7.32			1.51	−7.42
111	172	0.242		0.080	−0.027		0.268		−0.075	0.006	1.15	−1.60			1.57	−1.55
112	173	0.233		0.087	−0.036		0.258		−0.086	0.013	1.31	2.89			1.88	3.12
113	174	0.225		0.093	−0.044		0.249		−0.096	0.020	1.04	8.66			1.73	9.05
114	175	0.200		0.087	−0.038		0.220		−0.092	0.018	1.04	13.28			1.68	13.65
115	176	0.192		0.093	−0.044		0.212		−0.101	0.024	0.79	19.33			1.55	19.87
116	177	0.183		0.087	−0.047		0.201		−0.095	0.029	0.79	24.22			1.58	24.82
117	178	0.158		0.080	−0.041		0.173		−0.089	0.027	0.49	30.49			1.16	31.01
118	179	0.150		0.067	−0.034		0.163		−0.074	0.023	0.33	35.47			0.83	35.88
119	180	−0.183		0.013	−0.006		−0.190		−0.001	0.007	0.54	42.49			0.64	42.55
120	181	−0.175		0.013	−0.008		−0.182		−0.002	0.009	0.18	47.54			0.29	47.66
121	182	−0.142		0.013	−0.005		−0.148		−0.007	0.006	−0.71	53.71			−0.63	53.84
122	183	−0.100		0.013	0.000		−0.105		−0.011	0.001	−1.08	59.00			−1.03	59.15
123	184	−0.083		0.020	0.005		−0.087		−0.020	−0.003	−2.32	65.05			−2.27	65.26
124	185	−0.058		0.027	0.009		−0.061		−0.030	−0.007	−3.21	70.05			−3.12	70.35
125	186	−0.017		0.000	0.004		−0.018		0.000	−0.004	−4.68	76.10			−4.68	76.38
126	187	0.008		0.000	0.004		0.008		0.000	−0.004	−5.16	81.76			−5.15	82.10
127	188	−0.025		−0.007	0.004		−0.026		0.008	−0.004	−4.36	90.31			−4.35	90.72
128	189	0.017	0.032	0.000	0.000	0.001	0.018	−0.043	0.001	0.001	−3.38	97.64			−3.34	98.14

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 61 (Pm)																
129	190	0.050	0.075	−0.033	0.004	−0.014	0.055	−0.103	0.043	0.002	−2.45	106.53			−2.13	107.39
130	191	0.058	0.088	−0.040	0.005	−0.013	0.065	−0.121	0.052	0.004	−1.74	113.82			−1.27	114.89
131	192	0.100	0.090	−0.053	0.008	−0.014	0.110	−0.125	0.072	0.006	−1.40	122.34			−0.77	123.64
132	193	0.108	0.084	−0.067	0.012	−0.008	0.118	−0.117	0.090	0.004	−0.75	129.78			0.03	131.30
133	194	0.150	0.089	−0.073	0.014	−0.004	0.164	−0.124	0.103	0.008	−0.30	138.62			0.65	140.38
134	195	0.158		−0.080	−0.013		0.173		0.111	0.033	0.03	145.94			1.04	147.85
135	196	0.175		−0.087	−0.009		0.191		0.123	0.033	−0.46	154.04			0.69	156.16
136	197	0.192		−0.087	−0.005		0.210		0.126	0.031	−0.40	161.31			0.80	163.55
137	198	0.192		−0.087	−0.001		0.209		0.126	0.027	−0.84	169.65			0.30	171.91
138	199	0.200		−0.080	0.004		0.217		0.118	0.021	−0.70	177.20			0.31	179.42
139	200	0.200		−0.080	0.007		0.217		0.118	0.017	−1.03	185.84			−0.03	188.12
140	201	0.208	0.021	−0.080	0.021	0.015	0.225	−0.029	0.120	0.004	−0.95	193.52			0.12	195.96
141	202	0.208	0.012	−0.073	0.019	0.018	0.224	−0.017	0.111	0.004	−1.31	202.32			−0.39	204.70
142	203	0.217		−0.067	0.025		0.234		0.106	−0.004	−1.56	209.86			−0.64	212.32
143	204	0.217		−0.067	0.032		0.233		0.106	−0.011	−2.11	218.65			−1.11	221.27
144	205	0.225		−0.053	0.042		0.242		0.091	−0.024	−2.24	226.49			−1.19	229.26
Z = 62 (Sm)																
61	123	0.308		−0.020	0.051		0.337		0.073	−0.037	−0.37	−11.09			−0.47	−10.13
62	124	0.308		−0.013	0.047		0.337		0.064	−0.035	−0.20	−18.86			−0.28	−17.96
63	125	0.308		−0.007	0.042		0.338		0.056	−0.033	0.04	−23.29			−0.06	−22.50
64	126	0.300		0.000	0.033		0.329		0.044	−0.027	0.39	−29.69			0.33	−28.95
65	127	0.300		0.007	0.026		0.330		0.035	−0.023	0.57	−33.54			0.49	−32.90
66	128	0.300		0.013	0.019		0.330		0.026	−0.018	0.76	−39.44			0.70	−38.86
67	129	0.300		0.027	0.007		0.331		0.008	−0.012	0.93	−42.68			0.85	−42.20
68	130	0.300		0.033	0.006		0.331		0.000	−0.013	1.03	−48.05			0.97	−47.61
69	131	0.300		0.047	−0.006		0.332		−0.018	−0.007	1.12	−50.77			1.05	−50.42
70	132	0.292		0.040	−0.005		0.323		−0.012	−0.005	1.19	−55.56			1.15	−55.25
71	133	0.292		0.040	−0.009		0.323		−0.013	−0.001	1.38	−57.62			1.32	−57.38
72	134	0.283		0.033	−0.006		0.312		−0.006	−0.002	1.68	−61.59			1.65	−61.40
73	135	0.275		0.033	−0.009		0.303		−0.008	0.001	1.89	−63.07			1.86	−62.94
74	136	0.217		0.033	−0.010		0.237		−0.021	0.003	2.15	−66.52			2.15	−66.43
75	137	0.200		0.040	−0.012		0.218		−0.032	0.004	2.10	−67.74			2.09	−67.71
76	138	0.175		0.040	−0.018		0.190		−0.037	0.010	2.18	−70.83			2.19	−70.84
77	139	0.150		0.040	−0.014		0.163		−0.040	0.007	2.12	−71.55	−72.07	0.120	2.13	−71.62
78	140	−0.142		0.033	0.014		−0.148		−0.030	−0.008	1.82	−74.51			1.83	−74.62
79	141	−0.142		0.047	0.020		−0.147		−0.046	−0.011	1.16	−75.34	−75.94	0.013	1.18	−75.50
80	142	0.000		0.000	0.000		0.000		0.000	0.000	0.00	−78.66	−78.99	0.015	0.00	−78.88
81	143	−0.050		0.007	0.000		−0.053		−0.007	0.000	−1.09	−79.44	−79.53	0.005	−1.09	−79.71
82	144	0.000		0.000	0.000		0.000		0.000	0.000	−2.28	−82.32	−81.97	0.004	−2.29	−82.62
83	145	−0.033		−0.007	0.000		−0.035		0.009	0.000	−1.51	−80.79	−80.66	0.004	−1.51	−81.13
84	146	0.000		0.000	0.000		0.000		0.000	0.000	−0.41	−80.90	−81.00	0.004	−0.41	−81.28
85	147	0.133		−0.040	−0.008		0.143		0.056	0.016	0.67	−78.62	−79.28	0.003	0.72	−78.99
86	148	0.150		−0.040	0.003		0.161		0.059	0.006	1.12	−78.94	−79.35	0.003	1.18	−79.32
87	149	0.167	0.036	−0.040	0.010	0.015	0.180	−0.050	0.062	0.001	1.22	−77.22	−77.15	0.003	1.28	−77.63
88	150	0.192		−0.040	0.023		0.206		0.067	−0.012	1.31	−77.47	−77.06	0.003	1.41	−77.87
89	151	0.200		−0.047	0.024		0.215		0.077	−0.010	1.24	−75.50	−74.59	0.003	1.36	−75.91
90	152	0.225		−0.053	0.025		0.243		0.090	−0.007	0.90	−75.77	−74.77	0.003	1.06	−76.15
91	153	0.242		−0.060	0.027		0.261		0.102	−0.005	0.52	−73.72	−72.57	0.003	0.72	−74.09
92	154	0.250		−0.067	0.030		0.270		0.113	−0.005	0.38	−73.38	−72.46	0.003	0.64	−73.70
93	155	0.250		−0.060	0.032		0.270		0.105	−0.009	0.06	−70.90	−70.20	0.003	0.29	−71.26
94	156	0.258		−0.053	0.038		0.279		0.098	−0.017	−0.01	−70.09	−69.37	0.010	0.26	−70.43
95	157	0.258		−0.047	0.038		0.279		0.091	−0.019	−0.22	−67.13	−66.77	0.200	0.03	−67.50
96	158	0.258		−0.040	0.040		0.279		0.082	−0.023	−0.16	−65.82			0.12	−66.17
97	159	0.267		−0.033	0.044		0.290		0.076	−0.029	−0.48	−62.62			−0.19	−62.95
98	160	0.267		−0.027	0.044		0.290		0.069	−0.031	−0.43	−60.95			−0.11	−61.27
99	161	0.275		−0.013	0.045		0.300		0.054	−0.036	−0.73	−57.38			−0.41	−57.70
100	162	0.275		−0.007	0.046		0.300		0.047	−0.039	−0.67	−55.36			−0.31	−55.62

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 62 (Sm)																
101	163	0.275		0.000	0.049		0.301		0.039	−0.044	−0.97	−51.45			−0.57	−51.68
102	164	0.275		0.007	0.053		0.302		0.031	−0.051	−0.87	−49.05			−0.39	−49.18
103	165	0.275		0.020	0.043		0.303		0.014	−0.045	−0.93	−44.58			−0.53	−44.79
104	166	0.267		0.027	0.032		0.294		0.002	−0.037	−0.37	−41.38			−0.04	−41.65
105	167	0.258		0.033	0.021		0.284		−0.008	−0.028	−0.15	−36.32			0.08	−36.67
106	168	0.258		0.040	0.012		0.284		−0.018	−0.021	0.23	−32.98			0.45	−33.33
107	169	0.250		0.047	0.006		0.276		−0.029	−0.017	0.30	−27.77			0.51	−28.11
108	170	0.250		0.053	0.004		0.276		−0.036	−0.017	0.62	−24.17			0.87	−24.46
109	171	0.250		0.067	−0.007		0.277		−0.055	−0.011	0.63	−18.73			0.91	−18.96
110	172	0.250		0.073	−0.017		0.277		−0.063	−0.003	0.96	−14.83			1.30	−14.97
111	173	0.242		0.080	−0.027		0.268		−0.075	0.006	0.88	−9.19			1.30	−9.23
112	174	0.233		0.087	−0.036		0.258		−0.086	0.013	1.05	−5.15			1.61	−5.02
113	175	0.225		0.093	−0.044		0.249		−0.096	0.020	0.79	0.59			1.47	0.87
114	176	0.208		0.093	−0.042		0.230		−0.098	0.020	0.82	4.76			1.52	5.10
115	177	0.200		0.093	−0.047		0.220		−0.100	0.026	0.57	10.77			1.33	11.21
116	178	0.183		0.087	−0.045		0.201		−0.095	0.027	0.70	15.33			1.44	15.77
117	179	0.158		0.080	−0.038		0.173		−0.089	0.024	0.50	21.65			1.11	22.00
118	180	0.150		0.067	−0.032		0.163		−0.073	0.021	0.37	26.21			0.84	26.47
119	181	−0.183		0.020	−0.007		−0.190		−0.009	0.010	0.56	33.19			0.69	33.14
120	182	−0.175		0.020	−0.009		−0.182		−0.010	0.011	0.23	37.81			0.36	37.81
121	183	−0.150		0.020	−0.004		−0.156		−0.014	0.007	−0.53	44.06			−0.44	44.08
122	184	−0.108		0.020	0.000		−0.113		−0.018	0.002	−0.92	48.88			−0.86	48.91
123	185	−0.083		0.027	0.005		−0.087		−0.028	−0.002	−2.12	54.94			−2.05	55.03
124	186	−0.058		0.027	0.009		−0.061		−0.030	−0.007	−2.95	59.57			−2.87	59.71
125	187	−0.017		0.000	0.003		−0.018		0.000	−0.003	−4.35	65.65			−4.35	65.78
126	188	0.008		0.000	0.002		0.008		0.000	−0.002	−4.80	70.90			−4.80	71.08
127	189	−0.025		−0.007	0.003		−0.026		0.008	−0.003	−4.00	79.42			−3.99	79.66
128	190	−0.017		0.000	0.000		−0.018		0.000	0.000	−3.02	86.32			−3.02	86.61
129	191	0.050	0.078	−0.033	0.004	−0.014	0.056	−0.107	0.043	0.003	−2.10	95.18			−1.76	95.87
130	192	0.058	0.091	−0.040	0.005	−0.013	0.065	−0.126	0.053	0.004	−1.38	102.04			−0.90	102.94
131	193	0.100	0.090	−0.053	0.008	−0.015	0.110	−0.125	0.072	0.006	−0.93	110.64			−0.31	111.75
132	194	0.108	0.081	−0.067	0.012	−0.008	0.118	−0.113	0.089	0.003	−0.22	117.72			0.53	119.03
133	195	0.142	0.091	−0.073	0.014	−0.007	0.155	−0.127	0.102	0.008	0.12	126.42			1.05	127.98
134	196	0.150		−0.080	−0.016		0.164		0.110	0.035	0.51	133.39			1.53	135.10
135	197	0.167		−0.087	−0.012		0.183		0.121	0.035	−0.02	141.42			1.13	143.34
136	198	0.183		−0.087	−0.011		0.200		0.124	0.037	−0.03	148.21			1.20	150.28
137	199	0.192		−0.080	−0.005		0.209		0.117	0.029	−0.34	156.66			0.69	158.60
138	200	0.200		−0.073	0.001		0.217		0.109	0.021	−0.20	163.80			0.70	165.68
139	201	0.200		−0.080	0.008		0.217		0.118	0.016	−0.60	172.34			0.38	174.39
140	202	0.200	0.021	−0.073	0.018	0.011	0.216	−0.029	0.110	0.004	−0.39	179.75			0.51	181.79
141	203	0.208	0.012	−0.067	0.017	0.017	0.224	−0.017	0.103	0.004	−0.87	188.41			−0.05	190.45
142	204	0.208		−0.060	0.020		0.224		0.095	−0.002	−0.75	195.92			0.00	197.97
143	205	0.217		−0.060	0.032		0.234		0.097	−0.013	−1.71	204.27			−0.83	206.55
144	206	0.225		−0.047	0.039		0.242		0.083	−0.023	−1.85	211.71			−0.93	214.11
145	207	0.233		−0.047	0.051		0.251		0.086	−0.035	−2.72	220.34			−1.47	223.15
146	208	0.233		−0.040	0.055		0.251		0.078	−0.041	−2.77	228.05			−1.39	231.09
Z = 63 (Eu)																
62	125	0.308		−0.007	0.041		0.338		0.056	−0.032	−0.16	−7.59			−0.28	−6.55
63	126	0.300		0.000	0.036		0.329		0.044	−0.030	0.17	−12.81			0.04	−11.88
64	127	0.300		0.007	0.029		0.330		0.035	−0.026	0.37	−19.70			0.26	−18.84
65	128	0.300		0.013	0.023		0.330		0.027	−0.022	0.49	−24.24			0.36	−23.47
66	129	0.300		0.020	0.016		0.331		0.017	−0.018	0.62	−30.30			0.52	−29.60
67	130	0.300		0.033	0.005		0.331		0.000	−0.012	0.73	−34.22			0.61	−33.61
68	131	0.300		0.033	0.004		0.331		0.000	−0.011	0.76	−39.75			0.67	−39.20
69	132	0.300		0.047	−0.007		0.332		−0.019	−0.006	0.78	−43.16			0.67	−42.69
70	133	0.292		0.047	−0.007		0.323		−0.021	−0.006	0.86	−48.03			0.79	−47.61
71	134	0.292		0.040	−0.009		0.323		−0.013	−0.001	1.07	−50.66			0.98	−50.33

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 63 (Eu)																
72	135	0.292		0.040	−0.008		0.323		−0.012	−0.002	1.37	−54.73			1.32	−54.44
73	136	0.283		0.033	−0.008		0.312		−0.006	0.000	1.65	−56.74			1.58	−56.52
74	137	0.275		0.033	−0.009		0.303		−0.008	0.001	1.97	−60.23			1.93	−60.05
75	138	0.200		0.040	−0.012		0.218		−0.032	0.004	1.93	−62.01			1.91	−61.89
76	139	0.192		0.040	−0.014		0.209		−0.034	0.006	1.94	−65.27			1.93	−65.19
77	140	0.158		0.040	−0.015		0.171		−0.039	0.008	2.04	−66.40			2.03	−66.38
78	141	−0.150		0.027	0.010		−0.156		−0.022	−0.005	1.89	−69.30	−69.91	0.050	1.88	−69.33
79	142	−0.150		0.047	0.019		−0.156		−0.045	−0.010	1.27	−70.65	−71.59	0.100	1.28	−70.72
80	143	0.000		0.000	0.000		0.000		0.000	0.000	0.21	−73.96	−74.38	0.030	0.21	−74.10
81	144	−0.058		0.007	0.000		−0.061		−0.007	0.000	−0.77	−75.19	−75.65	0.021	−0.77	−75.38
82	145	0.000		0.000	0.000		0.000		0.000	0.000	−2.00	−78.19	−78.00	0.005	−2.00	−78.42
83	146	−0.042		−0.007	0.000		−0.044		0.009	0.000	−1.13	−77.11	−77.13	0.007	−1.13	−77.39
84	147	0.000		0.000	0.000		0.000		0.000	0.000	−0.13	−77.41	−77.56	0.004	−0.14	−77.73
85	148	0.142		−0.040	−0.005		0.153		0.058	0.013	0.85	−75.78	−76.24	0.018	0.89	−76.10
86	149	0.158		−0.033	0.001		0.170		0.051	0.007	1.18	−76.29	−76.45	0.005	1.22	−76.65
87	150	0.175		−0.040	0.015		0.188		0.063	−0.005	1.32	−75.08	−74.80	0.007	1.37	−75.46
88	151	0.200		−0.033	0.022		0.215		0.059	−0.012	1.39	−75.42	−74.66	0.003	1.46	−75.81
89	152	0.208		−0.040	0.024		0.224		0.070	−0.012	1.28	−74.03	−72.90	0.003	1.36	−74.44
90	153	0.233		−0.047	0.025		0.252		0.084	−0.008	1.02	−74.28	−73.38	0.003	1.15	−74.67
91	154	0.242		−0.053	0.025		0.262		0.093	−0.005	0.70	−72.71	−71.75	0.003	0.84	−73.11
92	155	0.250		−0.053	0.026		0.270		0.095	−0.005	0.54	−72.46	−71.83	0.003	0.70	−72.85
93	156	0.250		−0.053	0.029		0.270		0.096	−0.008	0.25	−70.47	−70.10	0.007	0.42	−70.88
94	157	0.250		−0.047	0.032		0.270		0.088	−0.014	0.21	−69.70	−69.47	0.006	0.40	−70.11
95	158	0.258		−0.040	0.035		0.279		0.082	−0.018	−0.08	−67.34	−67.21	0.080	0.10	−67.76
96	159	0.258		−0.033	0.037		0.280		0.073	−0.023	−0.08	−66.15	−66.06	0.009	0.13	−66.57
97	160	0.267		−0.027	0.040		0.290		0.069	−0.027	−0.42	−63.48			−0.20	−63.89
98	161	0.267		−0.020	0.040		0.290		0.060	−0.029	−0.45	−61.95			−0.20	−62.35
99	162	0.275		−0.007	0.041		0.300		0.047	−0.034	−0.72	−58.87			−0.48	−59.27
100	163	0.275		0.000	0.042		0.301		0.038	−0.037	−0.72	−56.95			−0.44	−57.32
101	164	0.275		0.007	0.045		0.302		0.030	−0.043	−1.03	−53.56			−0.71	−53.89
102	165	0.275		0.013	0.048		0.302		0.024	−0.048	−0.98	−51.25			−0.58	−51.51
103	166	0.275		0.020	0.042		0.303		0.014	−0.044	−1.09	−47.34			−0.75	−47.64
104	167	0.275		0.027	0.032		0.303		0.005	−0.037	−0.71	−44.37			−0.41	−44.71
105	168	0.267		0.033	0.022		0.294		−0.006	−0.029	−0.56	−39.87			−0.34	−40.28
106	169	0.258		0.040	0.012		0.284		−0.018	−0.021	−0.06	−36.46			0.13	−36.89
107	170	0.250		0.047	0.004		0.276		−0.029	−0.015	0.01	−31.73			0.19	−32.16
108	171	0.250		0.053	0.002		0.276		−0.037	−0.015	0.32	−28.21			0.52	−28.59
109	172	0.250		0.067	−0.008		0.277		−0.055	−0.010	0.34	−23.22			0.59	−23.55
110	173	0.250		0.073	−0.017		0.277		−0.063	−0.003	0.69	−19.35			1.00	−19.60
111	174	0.250		0.080	−0.028		0.277		−0.073	0.006	0.68	−14.11			1.06	−14.26
112	175	0.242		0.087	−0.037		0.268		−0.084	0.013	0.92	−10.05			1.43	−10.05
113	176	0.233		0.093	−0.047		0.258		−0.095	0.022	0.71	−4.74			1.35	−4.57
114	177	0.217		0.093	−0.045		0.240		−0.097	0.022	0.78	−0.56			1.45	−0.35
115	178	0.200		0.093	−0.047		0.220		−0.100	0.026	0.50	4.97			1.22	5.25
116	179	0.192		0.087	−0.046		0.211		−0.094	0.027	0.67	9.51			1.36	9.81
117	180	0.167		0.080	−0.039		0.183		−0.088	0.024	0.47	15.38			1.04	15.60
118	181	0.150		0.067	−0.031		0.163		−0.073	0.020	0.44	20.00			0.86	20.10
119	182	−0.183		0.020	−0.008		−0.190		−0.009	0.011	0.54	26.42			0.65	26.25
120	183	−0.175		0.020	−0.010		−0.182		−0.010	0.012	0.20	31.00			0.32	30.88
121	184	−0.150		0.020	−0.005		−0.156		−0.014	0.008	−0.52	36.86			−0.43	36.74
122	185	−0.117		0.020	0.000		−0.122		−0.018	0.003	−0.84	41.71			−0.78	41.60
123	186	−0.092		0.020	0.004		−0.096		−0.020	−0.002	−1.98	47.39			−1.93	47.32
124	187	−0.067		0.027	0.010		−0.070		−0.030	−0.007	−2.67	52.11			−2.59	52.12
125	188	−0.017		0.000	0.002		−0.018		0.000	−0.002	−4.15	57.69			−4.15	57.67
126	189	0.008		0.000	0.001		0.008		0.000	−0.001	−4.58	62.91			−4.59	62.94
127	190	−0.025		−0.007	0.002		−0.026		0.008	−0.002	−3.75	71.03			−3.74	71.12
128	191	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.76	77.92			−2.76	78.06

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 63 (Eu)																
129	192	0.050	0.087	−0.033	0.004	−0.016	0.056	−0.120	0.044	0.004	−2.00	86.18			−1.64	86.74
130	193	0.067	0.097	−0.040	0.005	−0.016	0.075	−0.134	0.053	0.006	−1.30	93.00			−0.81	93.75
131	194	0.100	0.092	−0.060	0.010	−0.015	0.110	−0.128	0.081	0.005	−0.60	101.43			0.06	102.40
132	195	0.108	0.081	−0.067	0.012	−0.009	0.118	−0.113	0.089	0.003	0.03	108.40			0.73	109.48
133	196	0.142	0.088	−0.073	0.014	−0.008	0.155	−0.122	0.101	0.007	0.40	116.71			1.25	118.00
134	197	0.150		−0.080	−0.015		0.164		0.110	0.034	0.68	123.55			1.64	125.01
135	198	0.167		−0.080	−0.015		0.183		0.112	0.037	0.23	131.24			1.23	132.81
136	199	0.183		−0.080	−0.011		0.200		0.115	0.034	0.29	138.07			1.32	139.74
137	200	0.192		−0.080	−0.002		0.209		0.117	0.026	−0.08	146.06			0.87	147.71
138	201	0.200		−0.067	0.001		0.217		0.101	0.020	0.07	153.18			0.82	154.71
139	202	0.200		−0.067	0.006		0.216		0.101	0.014	−0.27	161.38			0.45	162.95
140	203	0.208	0.018	−0.060	0.016	0.012	0.224	−0.024	0.094	0.003	−0.19	168.63			0.48	170.23
141	204	0.208	0.011	−0.060	0.016	0.018	0.224	−0.015	0.094	0.003	−0.64	176.91			0.02	178.59
142	205	0.217		−0.053	0.023		0.234		0.088	−0.006	−0.92	184.01			−0.25	185.76
143	206	0.217		−0.053	0.029		0.234		0.088	−0.012	−1.48	192.37			−0.75	194.26
144	207	0.225		−0.040	0.037		0.243		0.074	−0.023	−1.62	199.79			−0.83	201.81
145	208	0.233		−0.040	0.049		0.251		0.077	−0.035	−2.51	208.00			−1.40	210.44
146	209	0.233		−0.040	0.055		0.251		0.078	−0.041	−2.69	215.57			−1.35	218.31
147	210	0.233		−0.033	0.054		0.252		0.069	−0.042	−3.09	224.44			−1.80	227.23
148	211	0.233		−0.027	0.053		0.252		0.062	−0.043	−2.98	232.48			−1.72	235.32
Z = 64 (Gd)																
64	128	0.300		0.020	0.019		0.331		0.018	−0.021	0.60	−11.35			0.49	−10.30
65	129	0.300		0.027	0.014		0.331		0.009	−0.019	0.65	−16.06			0.52	−15.11
66	130	0.300		0.033	0.006		0.331		0.000	−0.013	0.71	−22.81			0.61	−21.93
67	131	0.300		0.047	−0.005		0.332		−0.018	−0.008	0.77	−26.88			0.65	−26.10
68	132	0.292		0.047	−0.006		0.323		−0.021	−0.007	0.67	−33.15			0.59	−32.42
69	133	0.292		0.060	−0.015		0.324		−0.038	−0.003	0.65	−36.68			0.56	−36.05
70	134	0.292		0.060	−0.015		0.324		−0.038	−0.003	0.70	−42.20			0.63	−41.62
71	135	0.283		0.053	−0.016		0.313		−0.032	0.001	0.89	−44.94			0.82	−44.45
72	136	0.275		0.053	−0.018		0.304		−0.034	0.003	1.20	−49.60			1.16	−49.15
73	137	0.267		0.053	−0.024		0.295		−0.037	0.009	1.47	−51.71			1.42	−51.34
74	138	0.233		0.047	−0.017		0.256		−0.036	0.006	1.58	−55.99			1.56	−55.67
75	139	0.200		0.047	−0.015		0.219		−0.041	0.005	1.73	−57.68			1.72	−57.42
76	140	0.192		0.047	−0.018		0.210		−0.043	0.008	1.70	−61.56			1.70	−61.36
77	141	−0.158		0.040	0.013		−0.164		−0.036	−0.005	2.55	−62.03			2.55	−61.89
78	142	−0.150		0.033	0.011		−0.156		−0.029	−0.005	1.69	−66.21			1.69	−66.13
79	143	−0.150		0.047	0.019		−0.156		−0.045	−0.010	1.08	−67.64			1.09	−67.61
80	144	0.000		0.000	0.000		0.000		0.000	0.000	0.20	−71.33			0.20	−71.36
81	145	−0.050		0.007	0.000		−0.053		−0.007	0.000	−0.90	−72.78	−72.95	0.040	−0.90	−72.86
82	146	0.000		0.000	−0.001		0.000		0.000	0.001	−2.06	−76.25	−76.10	0.005	−2.06	−76.39
83	147	−0.042		−0.007	0.000		−0.044		0.009	0.000	−1.17	−75.24	−75.37	0.004	−1.17	−75.43
84	148	0.000		0.000	0.000		0.000		0.000	0.000	−0.15	−76.07	−76.28	0.004	−0.16	−76.31
85	149	0.125		−0.033	−0.008		0.134		0.047	0.014	0.85	−74.49	−75.14	0.005	0.88	−74.75
86	150	0.150		−0.033	0.000		0.161		0.050	0.007	1.30	−75.43	−75.77	0.007	1.34	−75.72
87	151	0.167		−0.033	0.010		0.179		0.053	−0.002	1.51	−74.22	−74.20	0.004	1.54	−74.55
88	152	0.192		−0.027	0.016		0.207		0.050	−0.008	1.59	−75.10	−74.72	0.003	1.64	−75.44
89	153	0.200		−0.040	0.019		0.215		0.068	−0.007	1.58	−73.68	−72.89	0.003	1.65	−74.04
90	154	0.225		−0.040	0.020		0.243		0.073	−0.006	1.33	−74.46	−73.72	0.003	1.42	−74.83
91	155	0.233		−0.047	0.019		0.252		0.083	−0.002	1.05	−72.92	−72.08	0.003	1.16	−73.31
92	156	0.250		−0.047	0.023		0.271		0.088	−0.004	0.89	−73.18	−72.54	0.003	1.04	−73.56
93	157	0.250		−0.047	0.024		0.271		0.088	−0.005	0.62	−71.24	−70.83	0.003	0.77	−71.65
94	158	0.250		−0.040	0.027		0.271		0.079	−0.011	0.56	−71.02	−70.70	0.003	0.72	−71.43
95	159	0.258		−0.033	0.029		0.280		0.073	−0.015	0.26	−68.74	−68.57	0.003	0.41	−69.18
96	160	0.258		−0.027	0.031		0.280		0.065	−0.019	0.21	−68.12	−67.95	0.003	0.38	−68.55
97	161	0.267		−0.020	0.033		0.290		0.059	−0.022	−0.13	−65.50	−65.52	0.003	0.05	−65.95
98	162	0.267		−0.007	0.032		0.291		0.043	−0.026	−0.19	−64.51	−64.29	0.005	0.00	−64.96
99	163	0.275		0.000	0.034		0.301		0.037	−0.030	−0.52	−61.54			−0.32	−61.99

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 64 (Gd)																
100	164	0.275		0.007	0.035		0.301		0.029	−0.033	−0.56	−60.18			−0.33	−60.60
101	165	0.275		0.013	0.038		0.302		0.022	−0.038	−0.90	−56.87			−0.64	−57.27
102	166	0.275		0.027	0.038		0.303		0.005	−0.042	−0.82	−55.03			−0.50	−55.38
103	167	0.275		0.033	0.034		0.304		−0.002	−0.040	−1.00	−51.24			−0.71	−51.62
104	168	0.267		0.033	0.025		0.294		−0.006	−0.032	−0.65	−48.79			−0.40	−49.21
105	169	0.258		0.040	0.016		0.284		−0.017	−0.025	−0.55	−44.40			−0.36	−44.87
106	170	0.258		0.047	0.008		0.285		−0.027	−0.019	−0.28	−41.71			−0.08	−42.17
107	171	0.250		0.053	0.003		0.276		−0.037	−0.016	−0.30	−37.12			−0.10	−37.57
108	172	0.250		0.060	0.001		0.277		−0.045	−0.016	−0.02	−34.10			0.22	−34.50
109	173	0.250		0.073	−0.010		0.277		−0.062	−0.009	−0.02	−29.19			0.26	−29.54
110	174	0.250		0.073	−0.018		0.277		−0.063	−0.002	0.29	−25.83			0.61	−26.13
111	175	0.250		0.080	−0.029		0.277		−0.073	0.007	0.28	−20.64			0.66	−20.86
112	176	0.242		0.087	−0.037		0.268		−0.084	0.013	0.52	−17.05			1.02	−17.13
113	177	0.233		0.100	−0.047		0.259		−0.103	0.021	0.33	−11.76			1.01	−11.63
114	178	0.217		0.093	−0.044		0.240		−0.097	0.021	0.45	−8.00			1.09	−7.89
115	179	0.200		0.093	−0.047		0.220		−0.100	0.026	0.23	−2.46			0.92	−2.28
116	180	0.192		0.087	−0.045		0.211		−0.094	0.026	0.44	1.67			1.10	1.85
117	181	0.175		0.080	−0.040		0.192		−0.087	0.024	0.23	7.49			0.80	7.60
118	182	0.150		0.067	−0.031		0.163		−0.073	0.020	0.34	11.80			0.76	11.79
119	183	−0.183		0.027	−0.009		−0.190		−0.017	0.013	0.39	18.13			0.53	17.88
120	184	−0.175		0.027	−0.011		−0.182		−0.018	0.015	0.07	22.27			0.22	22.07
121	185	−0.150		0.020	−0.007		−0.156		−0.014	0.009	−0.59	28.15			−0.50	27.93
122	186	−0.117		0.020	−0.002		−0.122		−0.017	0.004	−0.86	32.60			−0.80	32.39
123	187	−0.092		0.027	0.005		−0.096		−0.028	−0.002	−1.93	38.32			−1.86	38.15
124	188	−0.067		0.033	0.011		−0.070		−0.036	−0.008	−2.55	42.68			−2.44	42.58
125	189	−0.017		0.000	0.001		−0.018		0.000	−0.001	−3.98	48.26			−3.98	48.11
126	190	0.008		0.000	0.000		0.008		0.000	0.000	−4.38	53.09			−4.38	52.98
127	191	−0.025		−0.007	0.002		−0.026		0.008	−0.002	−3.54	61.18			−3.54	61.13
128	192	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.55	67.64			−2.55	67.63
129	193	0.050	0.085	−0.033	0.004	−0.016	0.056	−0.117	0.043	0.004	−1.71	75.96			−1.36	76.34
130	194	0.067	0.096	−0.040	0.005	−0.016	0.075	−0.133	0.054	0.006	−0.95	82.40			−0.47	82.98
131	195	0.100	0.086	−0.053	0.008	−0.017	0.110	−0.119	0.071	0.005	−0.29	90.76			0.25	91.46
132	196	0.108	0.075	−0.060	0.010	−0.011	0.118	−0.104	0.080	0.004	0.36	97.33			0.94	98.13
133	197	0.133	0.086	−0.067	0.013	−0.013	0.145	−0.120	0.093	0.006	0.62	105.50			1.37	106.52
134	198	0.150		−0.073	−0.017		0.164		0.101	0.035	1.05	112.08			1.90	113.25
135	199	0.158		−0.080	−0.016		0.173		0.111	0.036	0.65	119.79			1.63	121.16
136	200	0.175		−0.080	−0.014		0.191		0.114	0.036	0.66	126.15			1.67	127.63
137	201	0.183		−0.080	−0.005		0.199		0.115	0.028	0.36	134.18			1.29	135.63
138	202	0.200		−0.067	0.002		0.217		0.101	0.018	0.50	140.88			1.23	142.20
139	203	0.200		−0.067	0.008		0.216		0.101	0.012	0.14	149.05			0.85	150.41
140	204	0.208	0.013	−0.060	0.016	0.015	0.224	−0.018	0.094	0.003	0.19	155.87			0.85	157.25
141	205	0.208		−0.060	0.021		0.224		0.095	−0.003	−0.27	164.12			0.41	165.60
142	206	0.217		−0.047	0.025		0.234		0.080	−0.010	−0.47	170.89			0.15	172.38
143	207	0.217		−0.047	0.032		0.234		0.081	−0.017	−1.05	179.21			−0.35	180.85
144	208	0.225		−0.040	0.039		0.243		0.074	−0.025	−1.29	186.13			−0.47	187.97
145	209	0.233		−0.040	0.046		0.251		0.077	−0.032	−2.02	194.48			−1.02	196.58
146	210	0.233		−0.033	0.049		0.252		0.069	−0.037	−2.12	201.74			−1.02	204.01
147	211	0.242		−0.027	0.050		0.262		0.063	−0.039	−2.70	210.42			−1.58	212.80
148	212	0.242		−0.020	0.048		0.262		0.055	−0.039	−2.61	218.04			−1.53	220.46
149	213	0.242		−0.007	0.043		0.263		0.038	−0.038	−2.84	227.25			−1.89	229.62
150	214	0.242		0.000	0.041		0.264		0.030	−0.038	−2.63	235.17			−1.73	237.58
Z = 65 (Tb)																
65	130	0.300		0.033	0.010		0.332		0.001	−0.017	0.45	−5.60			0.29	−4.49
66	131	0.300		0.040	0.003		0.332		−0.009	−0.013	0.44	−12.75			0.31	−11.71
67	132	0.300		0.053	−0.005		0.333		−0.026	−0.010	0.41	−17.52			0.26	−16.59
68	133	0.300		0.053	−0.007		0.333		−0.026	−0.008	0.30	−23.89			0.18	−23.03
69	134	0.292		0.067	−0.016		0.325		−0.046	−0.004	0.20	−28.11			0.08	−27.34

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 65$ (Tb)																
70	135	0.292		0.067	−0.017		0.325		−0.046	−0.003	0.21	−33.76			0.11	−33.05
71	136	0.283		0.060	−0.015		0.314		−0.040	−0.002	0.39	−37.11			0.29	−36.49
72	137	0.283		0.060	−0.017		0.314		−0.040	0.000	0.76	−41.80			0.68	−41.23
73	138	0.275		0.053	−0.018		0.304		−0.034	0.003	1.05	−44.47			0.96	−44.00
74	139	0.267		0.047	−0.017		0.294		−0.028	0.005	1.36	−48.65			1.30	−48.22
75	140	0.208		0.047	−0.018		0.228		−0.040	0.008	1.29	−51.14			1.25	−50.76
76	141	0.200		0.047	−0.020		0.219		−0.042	0.010	1.37	−54.99			1.35	−54.67
77	142	−0.175		0.033	0.008		−0.182		−0.026	−0.002	2.30	−55.96			2.27	−55.72
78	143	−0.158		0.033	0.009		−0.164		−0.028	−0.003	1.57	−60.09			1.56	−59.90
79	144	−0.150		0.047	0.017		−0.156		−0.045	−0.008	1.00	−62.05			1.00	−61.92
80	145	−0.142		0.033	0.011		−0.148		−0.030	−0.005	0.21	−65.74	−66.25	0.200	0.20	−65.66
81	146	−0.067		0.007	0.000		−0.070		−0.006	0.001	−0.65	−67.50	−67.86	0.150	−0.65	−67.48
82	147	−0.008		0.000	0.000		−0.008		0.000	0.000	−1.94	−71.18	−70.83	0.030	−1.94	−71.22
83	148	−0.050		−0.007	−0.001		−0.052		0.009	0.001	−0.88	−70.56	−70.66	0.024	−0.88	−70.65
84	149	−0.042		−0.007	−0.001		−0.044		0.009	0.001	0.01	−71.59	−71.50	0.005	0.01	−71.74
85	150	0.133		−0.033	−0.009		0.143		0.048	0.016	0.91	−70.67	−71.11	0.008	0.93	−70.85
86	151	0.150		−0.027	−0.002		0.161		0.043	0.008	1.28	−71.76	−71.63	0.005	1.30	−71.99
87	152	0.175		−0.027	0.008		0.188		0.047	−0.001	1.45	−71.13	−70.77	0.070	1.46	−71.40
88	153	0.200		−0.020	0.016		0.216		0.043	−0.009	1.54	−72.06	−71.32	0.005	1.57	−72.36
89	154	0.200		−0.033	0.017		0.216		0.059	−0.007	1.56	−71.16	−70.15	0.050	1.60	−71.49
90	155	0.225		−0.027	0.017		0.243		0.057	−0.007	1.34	−71.97	−71.26	0.012	1.39	−72.32
91	156	0.233		−0.040	0.016		0.252		0.074	−0.001	1.10	−70.92	−70.10	0.005	1.16	−71.29
92	157	0.250		−0.033	0.018		0.271		0.070	−0.004	0.99	−71.21	−70.77	0.003	1.07	−71.60
93	158	0.250		−0.040	0.020		0.271		0.079	−0.004	0.73	−69.77	−69.48	0.003	0.82	−70.19
94	159	0.250		−0.027	0.021		0.271		0.062	−0.009	0.64	−69.64	−69.54	0.003	0.73	−70.08
95	160	0.250		−0.027	0.023		0.271		0.063	−0.011	0.38	−67.83	−67.85	0.003	0.48	−68.29
96	161	0.258		−0.013	0.024		0.281		0.048	−0.016	0.25	−67.35	−67.47	0.003	0.36	−67.82
97	162	0.258		−0.013	0.027		0.281		0.048	−0.019	−0.05	−65.21	−65.68	0.040	0.05	−65.71
98	163	0.267		0.000	0.027		0.292		0.034	−0.023	−0.22	−64.40	−64.70	0.040	−0.09	−64.89
99	164	0.267		0.007	0.028		0.292		0.026	−0.026	−0.55	−61.92	−62.09	0.100	−0.41	−62.42
100	165	0.267		0.013	0.029		0.293		0.019	−0.029	−0.60	−60.63			−0.43	−61.11
101	166	0.275		0.027	0.031		0.303		0.004	−0.036	−0.94	−57.82			−0.75	−58.29
102	167	0.275		0.033	0.032		0.304		−0.003	−0.039	−0.95	−56.13			−0.71	−56.56
103	168	0.275		0.040	0.028		0.304		−0.011	−0.037	−1.14	−52.84			−0.92	−53.29
104	169	0.267		0.040	0.021		0.295		−0.015	−0.030	−0.87	−50.53			−0.67	−51.01
105	170	0.258		0.040	0.014		0.284		−0.018	−0.023	−0.88	−46.72			−0.72	−47.25
106	171	0.258		0.047	0.007		0.285		−0.027	−0.019	−0.65	−44.13			−0.48	−44.65
107	172	0.250		0.053	0.003		0.276		−0.037	−0.016	−0.67	−40.03			−0.51	−40.54
108	173	0.250		0.067	0.000		0.277		−0.054	−0.017	−0.41	−37.08			−0.18	−37.52
109	174	0.250		0.073	−0.009		0.277		−0.062	−0.010	−0.43	−32.66			−0.18	−33.08
110	175	0.250		0.073	−0.015		0.277		−0.063	−0.004	−0.09	−29.33			0.18	−29.71
111	176	0.250		0.080	−0.026		0.277		−0.073	0.004	−0.06	−24.56			0.27	−24.88
112	177	0.250		0.087	−0.039		0.277		−0.083	0.015	0.28	−20.92			0.74	−21.09
113	178	0.233		0.093	−0.046		0.258		−0.094	0.021	0.01	−16.17			0.58	−16.22
114	179	0.225		0.093	−0.046		0.249		−0.096	0.022	0.19	−12.39			0.80	−12.39
115	180	0.208		0.093	−0.049		0.229		−0.099	0.027	−0.04	−7.33			0.61	−7.26
116	181	0.200		0.087	−0.046		0.220		−0.093	0.026	0.22	−3.19			0.83	−3.13
117	182	0.175		0.080	−0.040		0.192		−0.087	0.024	0.09	2.26			0.61	2.24
118	183	0.150		0.067	−0.031		0.163		−0.073	0.020	0.26	6.59			0.64	6.45
119	184	−0.192		0.027	−0.009		−0.199		−0.016	0.013	0.25	12.41			0.39	12.06
120	185	−0.183		0.027	−0.012		−0.190		−0.017	0.016	−0.06	16.52			0.09	16.22
121	186	−0.150		0.020	−0.008		−0.156		−0.014	0.010	−0.71	21.96			−0.62	21.63
122	187	−0.125		0.020	−0.002		−0.130		−0.017	0.005	−0.94	26.43			−0.87	26.10
123	188	−0.100		0.027	0.004		−0.105		−0.027	−0.001	−1.86	31.85			−1.79	31.57
124	189	−0.075		0.033	0.011		−0.078		−0.036	−0.007	−2.44	36.20			−2.34	35.99
125	190	−0.033		0.007	0.003		−0.035		−0.008	−0.003	−3.66	41.57			−3.66	41.30
126	191	0.008	0.015	0.000	0.000	0.000	0.009	−0.020	0.000	0.000	−4.24	46.17			−4.24	45.95

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 65 (Tb)																
127	192	−0.033		−0.007	0.001		−0.035		0.009	−0.001	−3.26	53.98			−3.25	53.80
128	193	−0.033	0.014	−0.007	0.000	0.001	−0.035	−0.019	0.009	0.000	−2.20	60.47			−2.19	60.34
129	194	0.050	0.084	−0.033	0.004	−0.017	0.056	−0.116	0.043	0.003	−1.44	68.28			−1.12	68.50
130	195	0.075	0.095	−0.040	0.005	−0.018	0.083	−0.131	0.054	0.006	−0.63	74.75			−0.19	75.14
131	196	0.100	0.084	−0.053	0.008	−0.017	0.110	−0.117	0.071	0.005	−0.10	82.56			0.40	83.06
132	197	0.108	0.071	−0.060	0.010	−0.012	0.117	−0.099	0.080	0.003	0.52	89.07			1.05	89.66
133	198	0.133	0.081	−0.067	0.013	−0.012	0.145	−0.112	0.092	0.005	0.80	96.85			1.48	97.63
134	199	0.300		0.020	−0.002		0.330		0.015	−0.001	3.38	105.54			3.70	106.02
135	200	0.158		−0.080	−0.015		0.173		0.111	0.035	0.82	110.69			1.72	111.81
136	201	0.175		−0.080	−0.012		0.191		0.114	0.034	0.84	117.04			1.78	118.25
137	202	0.183		−0.073	−0.006		0.199		0.106	0.027	0.56	124.66			1.33	125.78
138	203	0.192		−0.067	0.001		0.208		0.100	0.019	0.65	131.30			1.33	132.38
139	204	0.200		−0.060	0.007		0.216		0.092	0.011	0.35	139.11			0.92	140.15
140	205	0.200		−0.060	0.013		0.216		0.093	0.005	0.35	145.85			0.94	146.98
141	206	0.208		−0.053	0.019		0.224		0.086	−0.003	−0.08	153.73			0.47	154.89
142	207	0.208		−0.047	0.021		0.224		0.078	−0.006	−0.05	160.72			0.48	161.92
143	208	0.217		−0.040	0.027		0.234		0.072	−0.014	−0.85	168.42			−0.29	169.71
144	209	0.225		−0.040	0.035		0.243		0.074	−0.021	−1.15	175.25			−0.44	176.77
145	210	0.233		−0.033	0.041		0.252		0.068	−0.029	−1.81	183.29			−1.01	184.97
146	211	0.233		−0.027	0.043		0.252		0.061	−0.033	−1.89	190.54			−1.02	192.37
147	212	0.233		−0.020	0.044		0.252		0.052	−0.036	−2.35	198.95			−1.48	200.86
148	213	0.233		−0.013	0.042		0.253		0.044	−0.036	−2.28	206.54			−1.45	208.49
149	214	0.233		0.000	0.038		0.254		0.027	−0.035	−2.54	215.34			−1.79	217.27
150	215	0.233		0.007	0.035		0.254		0.019	−0.034	−2.40	223.18			−1.68	225.17
151	216	0.242		0.013	0.037		0.265		0.014	−0.038	−2.92	231.88			−2.12	234.04
152	217	0.242		0.020	0.039		0.265		0.006	−0.042	−2.85	239.82			−1.92	242.19
153	218	0.242		0.027	0.038		0.266		−0.003	−0.043	−3.16	248.91			−2.22	251.38
Z = 66 (Dy)																
67	133	0.292		0.060	−0.013		0.324		−0.037	−0.004	0.18	−9.38			0.05	−8.24
68	134	0.292		0.067	−0.017		0.325		−0.046	−0.003	0.02	−16.42			−0.09	−15.35
69	135	0.292		0.080	−0.025		0.326		−0.063	0.000	−0.05	−20.71			−0.18	−19.75
70	136	0.292		0.080	−0.026		0.326		−0.063	0.001	−0.12	−27.02			−0.21	−26.13
71	137	0.275		0.073	−0.024		0.305		−0.059	0.003	0.05	−30.48			−0.05	−29.68
72	138	0.275		0.073	−0.026		0.305		−0.059	0.005	0.39	−35.79			0.32	−35.04
73	139	0.258		0.073	−0.027		0.286		−0.063	0.007	0.61	−38.62			0.54	−37.96
74	140	0.242		0.060	−0.022		0.267		−0.050	0.006	0.84	−43.46			0.80	−42.85
75	141	0.208		0.053	−0.016		0.228		−0.047	0.004	0.97	−45.83			0.94	−45.31
76	142	0.200		0.053	−0.019		0.219		−0.049	0.007	1.04	−50.28			1.03	−49.81
77	143	−0.167		0.040	0.009		−0.173		−0.035	−0.001	2.03	−51.27			2.01	−50.88
78	144	−0.158		0.033	0.008		−0.164		−0.028	−0.002	1.25	−56.03			1.24	−55.69
79	145	−0.150		0.047	0.017		−0.156		−0.045	−0.008	0.68	−58.06			0.67	−57.80
80	146	0.000		0.000	−0.001		0.000		0.000	0.001	−0.01	−62.21			−0.01	−62.01
81	147	−0.058		0.007	0.000		−0.061		−0.007	0.000	−1.07	−64.25	−64.46	0.060	−1.07	−64.11
82	148	0.000		0.000	0.000		0.000		0.000	0.000	−2.17	−68.31	−67.98	0.040	−2.17	−68.24
83	149	−0.042		−0.007	−0.001		−0.044		0.009	0.001	−1.32	−67.96			−1.32	−67.95
84	150	0.000		0.000	0.000		0.000		0.000	0.000	−0.31	−69.43	−69.32	0.005	−0.31	−69.48
85	151	0.117		−0.027	−0.004		0.125		0.039	0.009	0.77	−68.41	−68.76	0.004	0.77	−68.50
86	152	0.142		−0.027	−0.003		0.153		0.041	0.009	1.25	−69.93	−70.13	0.006	1.27	−70.07
87	153	0.158		−0.027	0.005		0.170		0.044	0.001	1.52	−69.27	−69.15	0.005	1.54	−69.46
88	154	0.192		−0.020	0.014		0.207		0.041	−0.008	1.63	−70.72	−70.40	0.009	1.66	−70.94
89	155	0.200		−0.027	0.014		0.216		0.051	−0.006	1.70	−69.84	−69.16	0.012	1.73	−70.11
90	156	0.217		−0.020	0.013		0.235		0.046	−0.005	1.56	−71.11	−70.53	0.007	1.60	−71.40
91	157	0.233		−0.033	0.013		0.252		0.065	0.000	1.35	−70.09	−69.43	0.007	1.41	−70.41
92	158	0.242		−0.027	0.013		0.262		0.060	−0.002	1.24	−70.91	−70.42	0.004	1.31	−71.25
93	159	0.250		−0.033	0.015		0.271		0.069	−0.001	1.03	−69.49	−69.18	0.003	1.11	−69.86
94	160	0.250		−0.020	0.017		0.272		0.053	−0.008	0.92	−69.90	−69.68	0.003	1.00	−70.30
95	161	0.250		−0.020	0.019		0.272		0.054	−0.010	0.64	−68.16	−68.06	0.003	0.73	−68.60

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 66 (Dy)																
96	162	0.258		−0.007	0.019		0.281		0.040	−0.013	0.47	−68.24	−68.19	0.003	0.56	−68.69
97	163	0.258		−0.007	0.023		0.281		0.040	−0.017	0.16	−66.17	−66.39	0.003	0.25	−66.65
98	164	0.267		0.007	0.022		0.292		0.025	−0.021	−0.06	−65.91	−65.98	0.003	0.06	−66.38
99	165	0.267		0.013	0.024		0.293		0.018	−0.024	−0.41	−63.52	−63.62	0.003	−0.29	−64.01
100	166	0.267		0.020	0.025		0.293		0.010	−0.028	−0.52	−62.78	−62.59	0.003	−0.36	−63.26
101	167	0.275		0.033	0.027		0.304		−0.003	−0.034	−0.89	−60.06	−59.94	0.060	−0.70	−60.53
102	168	0.275		0.040	0.027		0.304		−0.012	−0.036	−0.93	−58.90			−0.70	−59.34
103	169	0.275		0.040	0.025		0.304		−0.012	−0.034	−1.22	−55.76			−1.00	−56.22
104	170	0.267		0.047	0.016		0.295		−0.024	−0.027	−0.96	−53.96			−0.76	−54.44
105	171	0.258		0.047	0.010		0.285		−0.027	−0.021	−1.04	−50.28			−0.88	−50.81
106	172	0.258		0.060	0.001		0.286		−0.043	−0.017	−0.86	−48.22			−0.66	−48.71
107	173	0.250		0.067	−0.002		0.277		−0.054	−0.015	−0.96	−44.24			−0.75	−44.73
108	174	0.250		0.073	−0.004		0.278		−0.061	−0.015	−0.78	−41.85			−0.52	−42.29
109	175	0.250		0.080	−0.013		0.278		−0.071	−0.008	−0.80	−37.49			−0.52	−37.90
110	176	0.250		0.080	−0.020		0.278		−0.072	−0.002	−0.51	−34.67			−0.19	−35.04
111	177	0.250		0.087	−0.030		0.278		−0.082	0.006	−0.53	−30.00			−0.15	−30.31
112	178	0.242		0.093	−0.038		0.269		−0.092	0.013	−0.27	−26.92			0.21	−27.11
113	179	0.242		0.100	−0.061		0.268		−0.103	0.033	−0.41	−22.08			0.35	−21.99
114	180	0.225		0.100	−0.047		0.249		−0.104	0.021	−0.23	−18.77			0.42	−18.77
115	181	0.208		0.100	−0.048		0.230		−0.107	0.024	−0.41	−13.70			0.27	−13.66
116	182	0.200		0.093	−0.046		0.220		−0.100	0.025	−0.14	−10.01			0.50	−9.99
117	183	0.175		0.080	−0.039		0.192		−0.087	0.023	−0.22	−4.55			0.27	−4.66
118	184	0.150		0.073	−0.031		0.164		−0.081	0.019	−0.01	−0.64			0.40	−0.81
119	185	−0.192		0.033	−0.010		−0.199		−0.022	0.015	−0.04	5.13			0.12	4.73
120	186	−0.183		0.033	−0.013		−0.190		−0.023	0.018	−0.36	8.79			−0.18	8.43
121	187	−0.150		0.027	−0.009		−0.156		−0.021	0.013	−0.93	14.27			−0.81	13.88
122	188	−0.125		0.027	−0.002		−0.131		−0.025	0.006	−1.11	18.33			−1.03	17.93
123	189	−0.100		0.027	0.005		−0.105		−0.027	−0.002	−2.02	23.73			−1.95	23.34
124	190	−0.075		0.033	0.012		−0.078		−0.036	−0.008	−2.55	27.69			−2.45	27.38
125	191	−0.025		0.000	0.001		−0.026		0.000	−0.001	−3.82	32.98			−3.81	32.60
126	192	0.008		0.000	0.001		0.008		0.000	−0.001	−4.25	37.30			−4.25	36.96
127	193	−0.033		−0.007	0.001		−0.035		0.009	−0.001	−3.26	45.08			−3.25	44.78
128	194	−0.017	0.016	0.000	0.000	0.000	−0.018	−0.021	0.000	0.000	−2.39	50.95			−2.38	50.69
129	195	0.050	0.079	−0.027	0.003	−0.015	0.056	−0.109	0.036	0.003	−1.42	58.94			−1.16	58.97
130	196	0.075	0.089	−0.040	0.005	−0.018	0.083	−0.123	0.054	0.005	−0.41	65.18			−0.01	65.41
131	197	0.100	0.074	−0.053	0.008	−0.016	0.109	−0.103	0.071	0.004	0.17	73.01			0.61	73.32
132	198	0.108	0.063	−0.060	0.010	−0.010	0.117	−0.088	0.080	0.002	0.79	79.10			1.28	79.50
133	199	0.133	0.078	−0.060	0.012	−0.013	0.145	−0.108	0.083	0.004	1.08	86.85			1.65	87.39
134	200	0.150		−0.073	−0.014		0.163		0.101	0.031	1.46	92.93			2.20	93.68
135	201	0.150		−0.080	−0.016		0.164		0.110	0.035	1.16	100.31			2.04	101.25
136	202	0.167		−0.080	−0.013		0.182		0.112	0.034	1.18	106.25			2.10	107.29
137	203	0.175		−0.073	−0.008		0.190		0.104	0.028	0.92	113.87			1.68	114.81
138	204	0.183		−0.067	−0.001		0.198		0.098	0.020	1.04	120.12			1.69	121.01
139	205	0.192		−0.067	0.008		0.207		0.100	0.011	0.69	127.87			1.33	128.80
140	206	0.200		−0.060	0.013		0.216		0.093	0.005	0.69	134.21			1.28	135.16
141	207	0.200		−0.060	0.018		0.215		0.093	0.000	0.31	142.12			0.92	143.14
142	208	0.208		−0.047	0.021		0.224		0.078	−0.006	0.29	148.64			0.81	149.64
143	209	0.208		−0.047	0.027		0.224		0.079	−0.013	−0.22	156.62			0.36	157.74
144	210	0.217		−0.040	0.032		0.234		0.072	−0.019	−0.62	162.96			0.01	164.21
145	211	0.225		−0.033	0.038		0.243		0.066	−0.026	−1.29	170.96			−0.57	172.36
146	212	0.233		−0.027	0.042		0.252		0.061	−0.032	−1.49	177.70			−0.67	179.28
147	213	0.233		−0.020	0.042		0.252		0.052	−0.034	−1.96	186.08			−1.15	187.72
148	214	0.233		−0.007	0.038		0.253		0.036	−0.033	−1.86	193.32			−1.12	194.95
149	215	0.233		0.000	0.036		0.254		0.027	−0.033	−2.21	201.99			−1.54	203.64
150	216	0.233		0.013	0.032		0.254		0.011	−0.033	−2.09	209.43			−1.45	211.12
151	217	0.242		0.020	0.033		0.265		0.005	−0.036	−2.65	218.09			−1.92	219.94
152	218	0.242		0.027	0.035		0.266		−0.003	−0.040	−2.62	225.61			−1.76	227.68

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 66 (Dy)																
153	219	0.233		0.033	0.035		0.256		−0.012	−0.041	−2.81	234.80			−1.92	236.97
154	220	0.233		0.040	0.031		0.257		−0.021	−0.039	−2.59	242.69			−1.72	244.93
155	221	0.233		0.040	0.027		0.257		−0.022	−0.035	−2.75	252.07			−1.99	254.29
Z = 67 (Ho)																
69	136	0.292		0.087	−0.028		0.326		−0.072	0.001	−0.67	−11.27			−0.83	−10.15
70	137	0.292		0.087	−0.028		0.326		−0.072	0.001	−0.76	−17.71			−0.90	−16.66
71	138	0.283		0.087	−0.031		0.316		−0.075	0.004	−0.59	−21.75			−0.73	−20.80
72	139	0.275		0.080	−0.025		0.306		−0.067	0.001	−0.27	−27.16			−0.37	−26.27
73	140	0.267		0.080	−0.028		0.297		−0.070	0.005	0.01	−30.52			−0.10	−29.72
74	141	0.258		0.073	−0.026		0.286		−0.063	0.006	0.41	−35.28			0.33	−34.54
75	142	0.225		0.067	−0.022		0.248		−0.062	0.006	0.34	−38.43			0.28	−37.76
76	143	0.217		0.060	−0.022		0.238		−0.055	0.008	0.52	−42.85			0.47	−42.25
77	144	−0.183		0.040	0.008		−0.190		−0.032	0.000	1.67	−44.24			1.64	−43.71
78	145	−0.175		0.040	0.009		−0.182		−0.034	−0.001	0.98	−48.99			0.96	−48.53
79	146	−0.158		0.040	0.015		−0.164		−0.036	−0.007	0.44	−51.57			0.42	−51.18
80	147	−0.150		0.033	0.010		−0.156		−0.029	−0.004	−0.22	−55.76			−0.23	−55.44
81	148	−0.075		0.007	0.000		−0.079		−0.006	0.001	−0.92	−58.00			−0.92	−57.74
82	149	−0.008		0.000	−0.001		−0.008		0.000	0.001	−2.06	−62.17			−2.06	−61.98
83	150	−0.050		−0.007	−0.002		−0.052		0.009	0.002	−1.07	−62.24	−62.06	0.090	−1.07	−62.11
84	151	−0.033		0.000	−0.002		−0.035		0.000	0.002	−0.23	−63.96	−63.71	0.030	−0.23	−63.89
85	152	0.117		−0.027	−0.011		0.126		0.038	0.016	0.68	−63.64	−63.73	0.060	0.69	−63.62
86	153	0.142		−0.027	−0.002		0.152		0.041	0.008	1.16	−65.25	−65.02	0.007	1.16	−65.29
87	154	0.158		−0.027	0.007		0.170		0.044	−0.001	1.47	−65.08	−64.65	0.009	1.47	−65.18
88	155	0.200		−0.007	0.011		0.216		0.027	−0.008	1.54	−66.64	−66.06	0.023	1.55	−66.79
89	156	0.200		−0.013	0.011		0.216		0.034	−0.006	1.61	−66.29			1.61	−66.49
90	157	0.217		−0.007	0.011		0.235		0.030	−0.007	1.52	−67.58	−66.89	0.050	1.53	−67.82
91	158	0.233		−0.013	0.010		0.253		0.040	−0.004	1.36	−67.03	−66.20	0.030	1.38	−67.31
92	159	0.242		−0.007	0.010		0.263		0.035	−0.005	1.31	−67.85	−67.34	0.004	1.34	−68.17
93	160	0.250		−0.013	0.011		0.272		0.044	−0.004	1.08	−66.98	−66.39	0.011	1.11	−67.33
94	161	0.250		−0.007	0.013		0.272		0.037	−0.008	0.95	−67.47	−67.21	0.004	1.00	−67.85
95	162	0.250		−0.007	0.014		0.272		0.037	−0.009	0.66	−66.26	−66.05	0.004	0.70	−66.68
96	163	0.258		0.007	0.015		0.282		0.022	−0.014	0.46	−66.43	−66.39	0.003	0.51	−66.87
97	164	0.258		0.007	0.016		0.282		0.022	−0.015	0.13	−64.89	−64.99	0.003	0.18	−65.36
98	165	0.267		0.020	0.017		0.293		0.009	−0.020	−0.12	−64.72	−64.91	0.003	−0.04	−65.19
99	166	0.267		0.020	0.021		0.293		0.009	−0.024	−0.52	−62.88	−63.08	0.003	−0.44	−63.38
100	167	0.267		0.033	0.020		0.294		−0.006	−0.027	−0.63	−62.21	−62.29	0.006	−0.51	−62.69
101	168	0.275		0.040	0.023		0.304		−0.012	−0.032	−1.04	−60.02	−60.26	0.100	−0.90	−60.51
102	169	0.275		0.040	0.024		0.304		−0.012	−0.033	−1.17	−59.00	−58.81	0.020	−1.00	−59.47
103	170	0.275		0.047	0.022		0.305		−0.021	−0.033	−1.44	−56.34	−56.25	0.050	−1.27	−56.83
104	171	0.267		0.053	0.013		0.296		−0.031	−0.026	−1.26	−54.66			−1.09	−55.17
105	172	0.258		0.053	0.008		0.285		−0.034	−0.021	−1.41	−51.53			−1.27	−52.08
106	173	0.258		0.060	0.001		0.286		−0.043	−0.017	−1.31	−49.61			−1.15	−50.14
107	174	0.258		0.073	−0.004		0.287		−0.060	−0.016	−1.49	−46.19			−1.30	−46.70
108	175	0.258		0.080	−0.007		0.287		−0.068	−0.015	−1.30	−43.84			−1.05	−44.30
109	176	0.250		0.080	−0.012		0.278		−0.071	−0.009	−1.32	−39.95			−1.08	−40.42
110	177	0.250		0.087	−0.021		0.278		−0.080	−0.003	−1.02	−37.17			−0.71	−37.57
111	178	0.250		0.093	−0.031		0.278		−0.089	0.005	−1.04	−32.97			−0.67	−33.32
112	179	0.250		0.093	−0.038		0.278		−0.090	0.012	−0.71	−29.86			−0.28	−30.14
113	180	0.242		0.100	−0.060		0.268		−0.103	0.032	−0.86	−25.50			−0.18	−25.52
114	181	0.233		0.100	−0.047		0.259		−0.103	0.021	−0.64	−22.19			−0.05	−22.30
115	182	0.217		0.100	−0.049		0.240		−0.106	0.024	−0.80	−17.56			−0.18	−17.62
116	183	0.200		0.087	−0.043		0.220		−0.092	0.023	−0.51	−13.88			0.02	−14.03
117	184	0.183		0.080	−0.038		0.201		−0.086	0.021	−0.60	−8.90			−0.15	−9.11
118	185	0.158		0.073	−0.031		0.173		−0.080	0.018	−0.22	−4.86			0.15	−5.13
119	186	−0.192		0.033	−0.013		−0.199		−0.022	0.018	−0.31	0.40			−0.16	−0.08
120	187	−0.183		0.033	−0.015		−0.190		−0.023	0.020	−0.62	4.02			−0.45	3.59
121	188	−0.158		0.027	−0.010		−0.165		−0.020	0.014	−1.10	9.15			−0.99	8.68

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 67 (Ho)																
122	189	−0.133		0.027	−0.003		−0.139		−0.024	0.007	−1.30	13.16			−1.22	12.68
123	190	−0.100		0.027	0.004		−0.105		−0.027	−0.001	−2.19	18.14			−2.13	17.66
124	191	−0.075		0.033	0.012		−0.078		−0.036	−0.008	−2.69	22.10			−2.59	21.69
125	192	−0.033		0.007	0.001		−0.035		−0.008	−0.001	−3.78	27.13			−3.78	26.65
126	193	0.008		0.000	0.001		0.008		0.000	−0.001	−4.27	31.35			−4.27	30.90
127	194	−0.033		−0.007	0.000		−0.035		0.009	0.000	−3.28	38.71			−3.27	38.30
128	195	−0.025	0.031	−0.007	0.000	−0.001	−0.026	−0.041	0.009	0.000	−2.32	44.62			−2.29	44.28
129	196	0.058	0.067	−0.033	0.004	−0.017	0.064	−0.092	0.043	0.002	−1.16	52.39			−0.94	52.27
130	197	0.075	0.079	−0.040	0.005	−0.017	0.082	−0.109	0.053	0.004	−0.24	58.51			0.08	58.53
131	198	0.100	0.062	−0.053	0.008	−0.014	0.108	−0.086	0.070	0.002	0.28	65.85			0.64	65.96
132	199	0.108	0.054	−0.060	0.010	−0.009	0.117	−0.075	0.080	0.001	0.87	71.88			1.30	72.09
133	200	0.133		−0.060	−0.012		0.144		0.082	0.024	1.17	79.23			1.63	79.52
134	201	0.150		−0.067	−0.015		0.163		0.093	0.031	1.49	85.22			2.12	85.72
135	202	0.150		−0.073	−0.017		0.164		0.101	0.035	1.23	92.22			1.97	92.88
136	203	0.167		−0.073	−0.012		0.182		0.103	0.031	1.29	98.17			2.03	98.88
137	204	0.175		−0.073	−0.005		0.190		0.104	0.025	1.02	105.38			1.71	106.09
138	205	0.183		−0.067	0.001		0.198		0.098	0.018	1.12	111.59			1.72	112.27
139	206	0.192		−0.060	0.006		0.207		0.091	0.011	0.80	118.96			1.32	119.61
140	207	0.200		−0.053	0.011		0.216		0.084	0.005	0.80	125.27			1.27	125.93
141	208	0.200		−0.053	0.016		0.215		0.084	0.000	0.41	132.77			0.90	133.51
142	209	0.200		−0.047	0.019		0.215		0.077	−0.005	0.49	139.37			0.95	140.14
143	210	0.208		−0.040	0.025		0.224		0.070	−0.013	−0.10	146.87			0.37	147.70
144	211	0.217		−0.033	0.030		0.234		0.063	−0.019	−0.47	153.22			0.06	154.18
145	212	0.225		−0.027	0.037		0.243		0.058	−0.027	−1.13	160.84			−0.50	161.96
146	213	0.225		−0.020	0.037		0.243		0.050	−0.029	−1.19	167.70			−0.55	168.90
147	214	0.233		−0.007	0.038		0.253		0.036	−0.033	−1.73	175.62			−1.07	176.92
148	215	0.233		0.000	0.036		0.254		0.027	−0.033	−1.74	182.73			−1.09	184.07
149	216	0.233		0.007	0.033		0.254		0.018	−0.032	−2.14	190.97			−1.54	192.34
150	217	0.233		0.020	0.030		0.255		0.002	−0.033	−2.10	198.31			−1.50	199.75
151	218	0.242		0.027	0.031		0.266		−0.004	−0.036	−2.68	206.55			−2.00	208.15
152	219	0.242		0.033	0.033		0.266		−0.011	−0.039	−2.71	214.01			−1.89	215.81
153	220	0.242		0.040	0.032		0.267		−0.019	−0.040	−3.03	222.69			−2.19	224.59
154	221	0.233		0.040	0.030		0.257		−0.021	−0.038	−2.73	230.64			−1.92	232.59
155	222	0.233		0.047	0.026		0.257		−0.030	−0.036	−2.95	239.60			−2.17	241.59
156	223	0.233		0.053	0.021		0.258		−0.038	−0.033	−2.75	247.63			−1.97	249.70
157	224	0.233		0.060	0.019		0.258		−0.046	−0.033	−3.09	256.62			−2.26	258.83
Z = 68 (Er)																
70	138	0.292		0.100	−0.034		0.327		−0.089	0.002	−1.04	−9.87			−1.16	−8.60
71	139	0.283		0.100	−0.037		0.317		−0.091	0.006	−0.93	−14.06			−1.05	−12.90
72	140	0.275		0.093	−0.032		0.307		−0.084	0.004	−0.52	−19.98			−0.62	−18.89
73	141	0.258		0.087	−0.031		0.287		−0.080	0.006	−0.31	−23.50			−0.41	−22.50
74	142	0.250		0.080	−0.030		0.277		−0.073	0.008	0.05	−28.87			−0.01	−27.93
75	143	0.217		0.073	−0.025		0.239		−0.071	0.008	0.14	−31.96			0.08	−31.10
76	144	0.200		0.067	−0.024		0.220		−0.066	0.009	0.34	−36.92			0.31	−36.13
77	145	−0.183		0.047	0.007		−0.190		−0.040	0.003	1.38	−38.51			1.35	−37.81
78	146	−0.167		0.040	0.007		−0.173		−0.035	0.001	0.67	−43.84			0.65	−43.21
79	147	−0.158		0.047	0.014		−0.164		−0.044	−0.005	0.14	−46.49			0.12	−45.95
80	148	−0.150		0.040	0.009		−0.156		−0.037	−0.002	−0.51	−51.23			−0.52	−50.75
81	149	−0.075		0.013	0.001		−0.079		−0.013	0.000	−1.23	−53.58	−53.61	0.470	−1.24	−53.17
82	150	−0.008		0.000	−0.001		−0.008		0.000	0.001	−2.34	−58.27			−2.34	−57.93
83	151	−0.050		−0.007	−0.002		−0.052		0.009	0.002	−1.35	−58.42			−1.35	−58.15
84	152	−0.017		0.000	−0.001		−0.018		0.000	0.001	−0.51	−60.67	−60.62	0.040	−0.51	−60.47
85	153	0.100		−0.027	−0.010		0.107		0.037	0.014	0.35	−60.48			0.36	−60.34
86	154	0.133		−0.027	−0.005		0.143		0.040	0.010	0.99	−62.46	−62.62	0.006	1.00	−62.38
87	155	0.150		−0.027	0.004		0.161		0.043	0.002	1.43	−62.24	−62.22	0.050	1.43	−62.23
88	156	0.175		−0.013	0.009		0.189		0.030	−0.005	1.62	−64.22			1.63	−64.26
89	157	0.192		−0.020	0.010		0.207		0.041	−0.004	1.76	−63.86	−63.42	0.090	1.77	−63.96

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 68$ (Er)																
90	158	0.200		−0.013	0.011		0.216		0.034	−0.006	1.78	−65.56			1.80	−65.70
91	159	0.217		−0.020	0.009		0.235		0.046	−0.001	1.64	−65.07	−64.57	0.005	1.66	−65.26
92	160	0.233		−0.013	0.009		0.253		0.040	−0.003	1.52	−66.48	−66.06	0.028	1.56	−66.70
93	161	0.242		−0.020	0.010		0.263		0.051	−0.001	1.35	−65.62	−65.20	0.010	1.38	−65.89
94	162	0.250		−0.007	0.011		0.272		0.037	−0.006	1.20	−66.64	−66.35	0.004	1.25	−66.95
95	163	0.250		−0.007	0.013		0.272		0.037	−0.008	0.92	−65.50	−65.18	0.006	0.96	−65.84
96	164	0.250		0.007	0.013		0.273		0.020	−0.012	0.70	−66.18	−65.95	0.004	0.76	−66.56
97	165	0.258		0.013	0.013		0.282		0.015	−0.014	0.32	−64.76	−64.53	0.004	0.37	−65.17
98	166	0.258		0.020	0.016		0.283		0.006	−0.019	0.07	−65.10	−64.93	0.003	0.14	−65.52
99	167	0.267		0.027	0.018		0.294		0.001	−0.023	−0.37	−63.35	−63.30	0.003	−0.28	−63.79
100	168	0.267		0.033	0.018		0.294		−0.007	−0.025	−0.54	−63.24	−63.00	0.003	−0.43	−63.68
101	169	0.275		0.040	0.022		0.304		−0.012	−0.031	−0.99	−61.15	−60.93	0.003	−0.86	−61.60
102	170	0.267		0.047	0.020		0.296		−0.023	−0.031	−1.08	−60.58	−60.12	0.003	−0.91	−61.03
103	171	0.275		0.053	0.019		0.305		−0.028	−0.032	−1.44	−58.06	−57.73	0.003	−1.26	−58.52
104	172	0.267		0.060	0.009		0.296		−0.040	−0.025	−1.31	−56.93	−56.49	0.005	−1.14	−57.40
105	173	0.258		0.060	0.005		0.286		−0.043	−0.020	−1.53	−53.92			−1.37	−54.44
106	174	0.258		0.073	−0.004		0.287		−0.060	−0.016	−1.47	−52.52			−1.27	−53.00
107	175	0.250		0.073	−0.005		0.278		−0.061	−0.014	−1.70	−49.21			−1.51	−49.71
108	176	0.250		0.080	−0.008		0.278		−0.070	−0.013	−1.58	−47.40			−1.34	−47.86
109	177	0.250		0.087	−0.016		0.278		−0.080	−0.007	−1.66	−43.61			−1.38	−44.06
110	178	0.250		0.093	−0.025		0.279		−0.088	0.000	−1.36	−41.31			−1.02	−41.69
111	179	0.250		0.100	−0.035		0.279		−0.098	0.007	−1.44	−37.23			−1.03	−37.54
112	180	0.242		0.100	−0.057		0.268		−0.103	0.029	−1.16	−34.62			−0.54	−34.73
113	181	0.242		0.107	−0.050		0.269		−0.110	0.021	−1.33	−30.33			−0.73	−30.46
114	182	0.233		0.107	−0.052		0.259		−0.112	0.024	−1.11	−27.49			−0.45	−27.55
115	183	0.217		0.107	−0.052		0.241		−0.115	0.026	−1.24	−22.87			−0.57	−22.91
116	184	0.200		0.093	−0.045		0.221		−0.100	0.024	−0.93	−19.63			−0.35	−19.77
117	185	0.183		0.087	−0.041		0.201		−0.094	0.023	−1.01	−14.68			−0.51	−14.89
118	186	0.158		0.073	−0.031		0.173		−0.080	0.018	−0.59	−11.05			−0.22	−11.37
119	187	−0.192		0.040	−0.012		−0.199		−0.030	0.019	−0.73	−5.88			−0.55	−6.39
120	188	−0.183		0.040	−0.016		−0.190		−0.031	0.022	−1.01	−2.68			−0.81	−3.14
121	189	−0.158		0.033	−0.010		−0.165		−0.027	0.015	−1.46	2.44			−1.34	1.92
122	190	−0.125		0.027	−0.004		−0.131		−0.025	0.007	−1.65	6.02			−1.58	5.47
123	191	−0.100		0.027	0.004		−0.105		−0.027	−0.001	−2.52	10.98			−2.46	10.43
124	192	−0.075		0.033	0.011		−0.078		−0.036	−0.007	−2.99	14.54			−2.90	14.04
125	193	−0.025		0.007	0.003		−0.026		−0.008	−0.003	−4.17	19.43			−4.17	18.88
126	194	0.008		0.000	−0.002		0.008		0.000	0.002	−4.51	23.39			−4.51	22.85
127	195	−0.033		−0.007	0.000		−0.035		0.009	0.000	−3.49	30.73			−3.48	30.23
128	196	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.61	36.14			−2.62	35.66
129	197	0.050	0.068	−0.027	0.003	−0.014	0.055	−0.093	0.035	0.002	−1.36	43.95			−1.17	43.70
130	198	0.067	0.081	−0.033	0.004	−0.015	0.074	−0.112	0.044	0.004	−0.38	49.71			−0.10	49.59
131	199	0.100	0.060	−0.047	0.007	−0.015	0.108	−0.083	0.063	0.002	0.29	57.18			0.60	57.11
132	200	0.100	0.053	−0.053	0.008	−0.013	0.108	−0.074	0.070	0.002	0.90	62.81			1.25	62.82
133	201	0.125		−0.060	−0.013		0.135		0.081	0.025	1.21	70.14			1.65	70.28
134	202	0.142		−0.060	−0.018		0.154		0.083	0.032	1.59	75.77			2.14	76.06
135	203	0.150		−0.073	−0.016		0.164		0.101	0.034	1.44	82.86			2.14	83.35
136	204	0.158		−0.073	−0.014		0.172		0.102	0.032	1.54	88.44			2.27	89.00
137	205	0.167		−0.073	−0.008		0.181		0.103	0.027	1.29	95.64			1.97	96.20
138	206	0.175		−0.067	−0.002		0.189		0.097	0.020	1.41	101.46			2.01	101.98
139	207	0.183		−0.060	0.004		0.198		0.089	0.012	1.13	108.84			1.63	109.32
140	208	0.192		−0.053	0.010		0.207		0.082	0.005	1.15	114.77			1.61	115.26
141	209	0.200		−0.053	0.017		0.215		0.084	−0.001	0.74	122.22			1.23	122.79
142	210	0.200		−0.047	0.019		0.215		0.077	−0.005	0.79	128.40			1.26	129.00
143	211	0.200		−0.040	0.023		0.215		0.068	−0.011	0.39	136.06			0.83	136.70
144	212	0.208		−0.033	0.029		0.224		0.061	−0.019	0.20	142.20			0.69	142.94
145	213	0.217		−0.027	0.034		0.234		0.056	−0.025	−0.63	149.63			−0.06	150.51
146	214	0.225		−0.020	0.037		0.243		0.050	−0.029	−0.82	155.96			−0.19	156.97

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 68 (Er)																
147	215	0.225		−0.013	0.039		0.244		0.041	−0.033	−1.33	163.90			−0.65	165.01
148	216	0.233		0.007	0.035		0.254		0.019	−0.034	−1.37	170.58			−0.74	171.72
149	217	0.233		0.013	0.032		0.254		0.011	−0.033	−1.83	178.75			−1.23	179.92
150	218	0.233		0.027	0.030		0.256		−0.006	−0.035	−1.85	185.64			−1.22	186.91
151	219	0.242		0.033	0.031		0.266		−0.011	−0.038	−2.46	193.84			−1.74	195.27
152	220	0.242		0.040	0.033		0.267		−0.019	−0.041	−2.51	200.90			−1.63	202.55
153	221	0.233		0.040	0.035		0.257		−0.021	−0.043	−2.79	209.60			−1.89	211.34
154	222	0.233		0.047	0.031		0.258		−0.029	−0.041	−2.62	217.05			−1.73	218.85
155	223	0.233		0.053	0.027		0.258		−0.037	−0.039	−2.89	225.94			−2.02	227.80
156	224	0.233		0.060	0.024		0.259		−0.046	−0.038	−2.76	233.52			−1.85	235.50
157	225	0.233		0.067	0.018		0.259		−0.055	−0.034	−3.08	242.53			−2.18	244.57
158	226	0.233		0.073	0.013		0.259		−0.062	−0.030	−3.03	250.21			−2.09	252.37
159	227	0.233		0.080	0.010		0.260		−0.071	−0.029	−3.53	259.20			−2.53	261.50
Z = 69 (Tm)																
72	141	0.275		0.100	−0.036		0.307		−0.093	0.006	−1.20	−10.36			−1.33	−9.10
73	142	0.267		0.100	−0.036		0.298		−0.095	0.006	−0.91	−14.38			−1.05	−13.22
74	143	0.258		0.093	−0.034		0.287		−0.088	0.007	−0.49	−19.78			−0.59	−18.68
75	144	0.233		0.080	−0.029		0.258		−0.077	0.008	−0.57	−23.60			−0.66	−22.59
76	145	0.225		0.080	−0.028		0.249		−0.078	0.008	−0.34	−28.63			−0.41	−27.68
77	146	−0.192		0.047	0.003		−0.199		−0.038	0.007	0.86	−30.62			0.80	−29.76
78	147	−0.183		0.047	0.006		−0.190		−0.040	0.004	0.19	−36.00			0.15	−35.21
79	148	−0.167		0.047	0.012		−0.173		−0.043	−0.002	−0.37	−39.22			−0.40	−38.52
80	149	−0.150		0.040	0.008		−0.156		−0.037	−0.001	−0.99	−44.02			−1.01	−43.39
81	150	−0.075		0.013	0.001		−0.079		−0.013	0.000	−1.42	−46.62			−1.43	−46.06
82	151	0.000		0.000	0.000		0.000		0.000	0.000	−2.43	−51.30			−2.43	−50.80
83	152	−0.050		−0.007	0.000		−0.052		0.009	0.000	−1.48	−52.02			−1.48	−51.60
84	153	−0.017		0.000	0.000		−0.018		0.000	0.000	−0.60	−54.31			−0.60	−53.97
85	154	0.108		−0.020	−0.006		0.116		0.029	0.009	0.17	−54.76	−54.55	0.100	0.16	−54.49
86	155	0.133		−0.020	−0.004		0.143		0.032	0.008	0.80	−56.82	−56.68	0.030	0.80	−56.62
87	156	0.150		−0.020	0.003		0.161		0.034	0.001	1.21	−57.16	−56.96	0.070	1.20	−57.03
88	157	0.175		−0.007	0.007		0.189		0.022	−0.004	1.43	−59.18			1.42	−59.11
89	158	0.192		−0.013	0.009		0.207		0.032	−0.005	1.62	−59.30			1.61	−59.30
90	159	0.200		0.000	0.009		0.217		0.018	−0.008	1.67	−61.04			1.67	−61.09
91	160	0.208		−0.007	0.009		0.225		0.028	−0.005	1.69	−60.91	−60.46	0.300	1.68	−61.02
92	161	0.233		0.013	0.005		0.254		0.008	−0.006	1.55	−62.40	−62.10	0.200	1.56	−62.56
93	162	0.242		0.007	0.004		0.264		0.017	−0.003	1.37	−62.06	−61.55	0.040	1.37	−62.27
94	163	0.250		0.020	0.004		0.274		0.003	−0.007	1.26	−63.12	−62.74	0.006	1.27	−63.36
95	164	0.250		0.013	0.006		0.273		0.012	−0.007	0.92	−62.53	−61.99	0.020	0.93	−62.83
96	165	0.250		0.027	0.007		0.274		−0.005	−0.012	0.73	−63.27	−62.94	0.004	0.76	−63.59
97	166	0.258		0.027	0.008		0.283		−0.003	−0.013	0.33	−62.35	−61.89	0.012	0.35	−62.72
98	167	0.258		0.033	0.010		0.284		−0.010	−0.017	0.04	−62.79	−62.55	0.003	0.09	−63.17
99	168	0.267		0.033	0.013		0.294		−0.007	−0.020	−0.43	−61.58	−61.32	0.004	−0.37	−61.99
100	169	0.267		0.047	0.012		0.295		−0.024	−0.024	−0.60	−61.53	−61.28	0.003	−0.51	−61.94
101	170	0.267		0.047	0.016		0.295		−0.024	−0.027	−1.07	−59.94	−59.80	0.003	−0.98	−60.38
102	171	0.267		0.053	0.014		0.296		−0.031	−0.027	−1.21	−59.49	−59.22	0.003	−1.08	−59.93
103	172	0.267		0.060	0.014		0.297		−0.039	−0.029	−1.56	−57.44	−57.38	0.006	−1.43	−57.90
104	173	0.267		0.067	0.004		0.297		−0.049	−0.022	−1.52	−56.45	−56.27	0.005	−1.37	−56.92
105	174	0.258		0.073	0.000		0.287		−0.059	−0.019	−1.76	−53.96	−53.87	0.040	−1.62	−54.45
106	175	0.258		0.080	−0.007		0.287		−0.068	−0.015	−1.80	−52.70	−52.30	0.050	−1.61	−53.17
107	176	0.258		0.080	−0.010		0.287		−0.069	−0.012	−2.14	−49.97			−1.96	−50.46
108	177	0.250		0.087	−0.010		0.279		−0.079	−0.013	−2.01	−48.21			−1.77	−48.66
109	178	0.250		0.093	−0.018		0.279		−0.087	−0.007	−2.12	−44.93			−1.86	−45.38
110	179	0.250		0.093	−0.025		0.279		−0.088	0.000	−1.87	−42.72			−1.56	−43.13
111	180	0.250		0.100	−0.034		0.279		−0.098	0.006	−1.93	−39.08			−1.57	−39.45
112	181	0.250		0.107	−0.042		0.279		−0.107	0.012	−1.64	−36.52			−1.17	−36.78
113	182	0.242		0.113	−0.049		0.270		−0.117	0.018	−1.80	−32.67			−1.23	−32.85
114	183	0.233		0.113	−0.051		0.259		−0.119	0.021	−1.56	−29.86			−0.93	−29.97

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 69 (Tm)																
115	184	0.217		0.107	−0.049		0.241		−0.114	0.023	−1.68	−25.68			−1.09	−25.84
116	185	0.208		0.100	−0.045		0.230		−0.107	0.021	−1.40	−22.52			−0.84	−22.70
117	186	0.192		0.087	−0.041		0.211		−0.093	0.022	−1.44	−17.98			−0.99	−18.27
118	187	0.158		0.073	−0.030		0.173		−0.080	0.017	−0.99	−14.37			−0.66	−14.77
119	188	−0.192		0.047	−0.014		−0.200		−0.038	0.022	−1.06	−9.57			−0.87	−10.10
120	189	−0.183		0.040	−0.018		−0.190		−0.031	0.024	−1.37	−6.44			−1.17	−6.95
121	190	−0.158		0.033	−0.012		−0.165		−0.027	0.017	−1.79	−1.72			−1.66	−2.30
122	191	−0.133		0.033	−0.012		−0.139		−0.030	0.016	−1.94	1.85			−1.82	1.28
123	192	−0.100		0.027	0.004		−0.105		−0.027	−0.001	−2.82	6.36			−2.77	5.74
124	193	−0.075		0.033	0.011		−0.078		−0.036	−0.007	−3.25	9.92			−3.17	9.35
125	194	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−4.40	14.42			−4.40	13.79
126	195	0.008		0.000	0.000		0.008		0.000	0.000	−4.78	18.28			−4.78	17.67
127	196	−0.033		−0.007	0.001		−0.035		0.009	−0.001	−3.68	25.28			−3.68	24.69
128	197	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.81	30.66			−2.81	30.09
129	198	0.050	0.058	−0.027	0.003	−0.013	0.055	−0.079	0.035	0.001	−1.49	38.11			−1.35	37.72
130	199	0.075	0.071	−0.033	0.004	−0.016	0.082	−0.098	0.044	0.003	−0.33	44.02			−0.10	43.74
131	200	0.100		−0.047	−0.014		0.108		0.062	0.021	0.08	50.80			0.34	50.59
132	201	0.100		−0.053	−0.011		0.108		0.069	0.019	0.76	56.47			1.05	56.33
133	202	0.125		−0.053	−0.012		0.135		0.072	0.022	1.13	63.45			1.47	63.38
134	203	0.142		−0.060	−0.015		0.154		0.083	0.028	1.54	69.08			2.02	69.18
135	204	0.150		−0.067	−0.015		0.163		0.093	0.031	1.44	75.80			2.01	76.05
136	205	0.158		−0.067	−0.012		0.172		0.094	0.029	1.58	81.40			2.16	81.69
137	206	0.167		−0.067	−0.008		0.181		0.095	0.025	1.33	88.19			1.90	88.51
138	207	0.175		−0.060	−0.002		0.189		0.088	0.018	1.45	93.98			1.93	94.25
139	208	0.183		−0.053	0.003		0.197		0.080	0.012	1.17	100.96			1.57	101.20
140	209	0.192		−0.047	0.010		0.207		0.075	0.003	1.19	106.86			1.56	107.12
141	210	0.200		−0.047	0.016		0.215		0.076	−0.002	0.78	113.92			1.18	114.26
142	211	0.200		−0.040	0.018		0.215		0.068	−0.006	0.84	120.07			1.21	120.44
143	212	0.200		−0.040	0.024		0.215		0.068	−0.012	0.37	127.28			0.79	127.74
144	213	0.208		−0.033	0.029		0.224		0.061	−0.019	0.18	133.39			0.65	133.95
145	214	0.208		−0.027	0.033		0.224		0.054	−0.024	−0.29	140.79			0.21	141.44
146	215	0.217		−0.020	0.036		0.235		0.048	−0.029	−0.68	146.90			−0.13	147.66
147	216	0.225		−0.013	0.040		0.244		0.042	−0.034	−1.32	154.32			−0.68	155.22
148	217	0.233		0.013	0.032		0.254		0.011	−0.033	−1.31	161.04			−0.75	161.91
149	218	0.233		0.020	0.028		0.255		0.002	−0.031	−1.78	168.81			−1.26	169.71
150	219	0.233		0.033	0.024		0.256		−0.014	−0.031	−1.81	175.67			−1.27	176.66
151	220	0.242		0.040	0.025		0.267		−0.020	−0.034	−2.42	183.49			−1.79	184.62
152	221	0.242		0.040	0.028		0.267		−0.020	−0.037	−2.47	190.51			−1.76	191.81
153	222	0.233		0.047	0.029		0.257		−0.030	−0.039	−2.80	198.80			−2.02	200.22
154	223	0.233		0.053	0.024		0.258		−0.037	−0.036	−2.65	206.21			−1.89	207.68
155	224	0.233		0.060	0.022		0.258		−0.046	−0.036	−2.98	214.66			−2.18	216.24
156	225	0.233		0.067	0.016		0.259		−0.055	−0.032	−2.86	222.23			−2.04	223.90
157	226	0.233		0.073	0.012		0.259		−0.063	−0.029	−3.25	230.79			−2.40	232.56
158	227	0.233		0.080	0.007		0.260		−0.072	−0.026	−3.23	238.42			−2.32	240.34
159	228	0.233		0.080	0.005		0.260		−0.072	−0.024	−3.73	247.05			−2.84	249.01
160	229	0.233		0.087	0.001		0.260		−0.081	−0.022	−3.82	254.75			−2.82	256.89
161	230	0.225		0.093	−0.005		0.251		−0.090	−0.017	−4.38	263.47			−3.32	265.76
Z = 70 (Yb)																
73	143	0.258		0.107	−0.044		0.288		−0.106	0.013	−1.19	−6.29			−1.31	−4.90
74	144	0.250		0.100	−0.041		0.278		−0.099	0.013	−0.79	−12.28			−0.87	−10.95
75	145	0.225		0.087	−0.036		0.249		−0.087	0.014	−0.80	−16.12			−0.88	−14.89
76	146	−0.200		0.047	−0.002		−0.207		−0.037	0.011	0.96	−20.17			0.92	−19.02
77	147	−0.183		0.053	0.007		−0.190		−0.047	0.004	0.47	−23.95			0.42	−22.88
78	148	−0.175		0.047	0.007		−0.182		−0.041	0.002	−0.25	−29.94			−0.29	−28.95
79	149	−0.158		0.047	0.011		−0.164		−0.044	−0.002	−0.78	−33.21			−0.81	−32.32
80	150	−0.150		0.040	0.009		−0.156		−0.037	−0.002	−1.46	−38.62			−1.48	−37.81
81	151	−0.067		0.013	0.001		−0.070		−0.013	0.000	−1.87	−41.28			−1.87	−40.54

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 70$ (Yb)																
82	152	0.000		0.000	0.000		0.000		0.000	0.000	−2.92	−46.54			−2.92	−45.88
83	153	−0.050		−0.007	−0.001		−0.052		0.009	0.001	−1.92	−47.30			−1.92	−46.72
84	154	−0.008		0.000	−0.001		−0.008		0.000	0.001	−1.04	−50.13			−1.04	−49.63
85	155	−0.092	0.013	−0.013	−0.002	−0.004	−0.096	−0.017	0.019	0.001	0.12	−50.26			0.11	−49.84
86	156	0.117		−0.020	−0.005		0.125		0.030	0.008	0.56	−53.05	−53.39	0.040	0.56	−52.70
87	157	0.142		−0.020	0.002		0.152		0.033	0.002	0.98	−53.45			0.98	−53.18
88	158	0.150		−0.020	0.007		0.161		0.034	−0.003	1.38	−55.81	−56.02	0.012	1.38	−55.60
89	159	0.175		−0.013	0.008		0.189		0.029	−0.004	1.65	−55.93			1.64	−55.80
90	160	0.192		0.000	0.007		0.208		0.016	−0.006	1.75	−58.14			1.75	−58.07
91	161	0.200		−0.007	0.010		0.216		0.026	−0.007	1.84	−58.01			1.84	−58.00
92	162	0.208		0.000	0.007		0.225		0.019	−0.005	1.82	−59.90			1.83	−59.94
93	163	0.225		−0.007	0.007		0.244		0.031	−0.003	1.63	−59.64	−59.37	0.100	1.63	−59.74
94	164	0.242		0.013	0.004		0.264		0.010	−0.005	1.47	−61.25			1.49	−61.39
95	165	0.250		0.007	0.006		0.273		0.019	−0.005	1.21	−60.65	−60.18	0.020	1.22	−60.85
96	166	0.250		0.020	0.005		0.274		0.003	−0.008	0.96	−61.95	−61.59	0.008	0.99	−62.18
97	167	0.250		0.020	0.007		0.274		0.004	−0.010	0.63	−61.03	−60.60	0.005	0.65	−61.31
98	168	0.258		0.033	0.007		0.284		−0.010	−0.014	0.32	−61.99	−61.58	0.004	0.37	−62.29
99	169	0.267		0.033	0.010		0.294		−0.008	−0.017	−0.11	−60.80	−60.37	0.004	−0.06	−61.14
100	170	0.267		0.047	0.008		0.295		−0.025	−0.020	−0.34	−61.29	−60.77	0.003	−0.26	−61.64
101	171	0.267		0.047	0.012		0.295		−0.024	−0.024	−0.76	−59.73	−59.31	0.003	−0.68	−60.12
102	172	0.267		0.060	0.007		0.296		−0.040	−0.023	−0.94	−59.80	−59.26	0.003	−0.82	−60.19
103	173	0.267		0.067	0.006		0.297		−0.049	−0.024	−1.32	−57.83	−57.56	0.003	−1.19	−58.24
104	174	0.258		0.073	−0.002		0.287		−0.059	−0.018	−1.30	−57.35	−56.95	0.003	−1.15	−57.77
105	175	0.258		0.073	−0.006		0.287		−0.060	−0.014	−1.69	−55.06	−54.70	0.003	−1.55	−55.51
106	176	0.250		0.080	−0.012		0.278		−0.071	−0.009	−1.74	−54.29	−53.50	0.003	−1.55	−54.72
107	177	0.250		0.087	−0.014		0.279		−0.079	−0.009	−2.12	−51.65	−51.00	0.003	−1.91	−52.09
108	178	0.250		0.093	−0.016		0.279		−0.087	−0.009	−2.10	−50.48	−49.71	0.010	−1.84	−50.89
109	179	0.250		0.100	−0.024		0.279		−0.096	−0.003	−2.26	−47.29			−1.96	−47.68
110	180	0.250		0.100	−0.032		0.279		−0.098	0.004	−2.06	−45.61			−1.71	−45.97
111	181	0.250		0.107	−0.040		0.279		−0.107	0.010	−2.18	−42.08			−1.77	−42.38
112	182	0.242		0.113	−0.046		0.270		−0.117	0.015	−2.01	−40.10			−1.48	−40.30
113	183	0.242		0.120	−0.054		0.270		−0.126	0.021	−2.06	−36.19			−1.43	−36.30
114	184	0.233		0.120	−0.057		0.260		−0.128	0.025	−1.95	−33.97			−1.24	−34.00
115	185	0.217		0.113	−0.054		0.241		−0.122	0.026	−2.13	−29.90			−1.48	−29.99
116	186	0.200		0.107	−0.049		0.221		−0.117	0.025	−1.78	−27.12			−1.15	−27.25
117	187	0.183		0.093	−0.043		0.201		−0.102	0.024	−1.85	−22.65			−1.36	−22.91
118	188	0.150		0.073	−0.031		0.164		−0.081	0.019	−1.46	−19.54			−1.13	−19.97
119	189	−0.192		0.047	−0.012		−0.200		−0.038	0.020	−1.46	−14.73			−1.28	−15.30
120	190	−0.183		0.040	−0.016		−0.190		−0.031	0.022	−1.78	−12.04			−1.59	−12.60
121	191	−0.158		0.033	−0.010		−0.165		−0.027	0.015	−2.22	−7.39			−2.10	−8.02
122	192	−0.125		0.033	−0.001		−0.131		−0.031	0.006	−2.39	−4.28			−2.31	−4.93
123	193	−0.100		0.027	0.004		−0.105		−0.027	−0.001	−3.30	0.16			−3.25	−0.50
124	194	−0.075		0.033	0.012		−0.078		−0.036	−0.008	−3.73	3.29			−3.65	2.66
125	195	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−4.88	7.75			−4.88	7.06
126	196	0.008		0.000	0.000		0.008		0.000	0.000	−5.19	11.25			−5.20	10.58
127	197	−0.025		−0.007	0.000		−0.026		0.008	0.000	−4.26	18.05			−4.26	17.39
128	198	0.017		0.000	0.001		0.018		0.000	−0.001	−3.25	23.13			−3.25	22.50
129	199	0.050	0.049	−0.020	0.002	−0.009	0.054	−0.067	0.026	0.001	−1.80	30.69			−1.70	30.17
130	200	0.058	0.072	−0.027	0.003	−0.011	0.064	−0.099	0.036	0.003	−0.68	36.13			−0.48	35.74
131	201	0.092		−0.047	−0.015		0.099		0.061	0.022	−0.14	43.01			0.12	42.71
132	202	0.100		−0.047	−0.012		0.108		0.062	0.019	0.61	48.33			0.86	48.04
133	203	0.117		−0.053	−0.012		0.126		0.071	0.022	0.89	55.18			1.21	55.00
134	204	0.133		−0.053	−0.013		0.144		0.073	0.024	1.52	60.62			1.89	60.52
135	205	0.150		−0.067	−0.015		0.163		0.093	0.031	1.54	67.44			2.11	67.57
136	206	0.150		−0.060	−0.012		0.163		0.084	0.026	1.74	72.68			2.22	72.75
137	207	0.158		−0.067	−0.011		0.172		0.094	0.028	1.52	79.47			2.08	79.67
138	208	0.167		−0.060	−0.004		0.181		0.086	0.019	1.65	84.88			2.12	85.02

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 70 (Yb)																
139	209	0.175		−0.060	0.003		0.189		0.088	0.013	1.39	91.84			1.84	92.01
140	210	0.192		−0.047	0.009		0.207		0.075	0.004	1.42	97.36			1.79	97.49
141	211	0.192		−0.047	0.014		0.207		0.075	−0.001	1.08	104.46			1.46	104.64
142	212	0.200		−0.040	0.017		0.215		0.068	−0.005	1.11	110.18			1.48	110.40
143	213	0.200		−0.040	0.023		0.215		0.068	−0.011	0.65	117.37			1.07	117.68
144	214	0.200		−0.033	0.026		0.215		0.060	−0.016	0.62	123.25			1.04	123.61
145	215	0.208		−0.027	0.032		0.224		0.054	−0.023	0.02	130.49			0.50	130.97
146	216	0.217		−0.020	0.035		0.235		0.048	−0.028	−0.33	136.26			0.21	136.84
147	217	0.217		−0.013	0.037		0.235		0.039	−0.031	−0.84	143.78			−0.26	144.46
148	218	0.217		−0.007	0.036		0.235		0.032	−0.032	−0.92	150.02			−0.34	150.75
149	219	0.225		0.013	0.030		0.245		0.009	−0.031	−1.45	157.71			−0.94	158.43
150	220	0.225		0.027	0.025		0.246		−0.008	−0.030	−1.49	164.18			−0.99	164.95
151	221	0.233		0.033	0.026		0.256		−0.013	−0.033	−2.11	171.98			−1.54	172.87
152	222	0.233		0.040	0.028		0.257		−0.022	−0.036	−2.15	178.63			−1.47	179.70
153	223	0.233		0.047	0.025		0.257		−0.030	−0.035	−2.47	186.91			−1.78	188.04
154	224	0.233		0.053	0.018		0.257		−0.038	−0.030	−2.32	193.94			−1.67	195.11
155	225	0.233		0.060	0.015		0.258		−0.047	−0.029	−2.66	202.36			−1.98	203.63
156	226	0.233		0.073	0.009		0.259		−0.063	−0.027	−2.60	209.50			−1.80	210.95
157	227	0.233		0.080	0.005		0.260		−0.072	−0.024	−3.05	217.99			−2.19	219.56
158	228	0.233		0.080	0.001		0.259		−0.072	−0.021	−3.05	225.24			−2.20	226.87
159	229	0.233		0.087	−0.002		0.260		−0.081	−0.019	−3.67	233.72			−2.74	235.51
160	230	0.233		0.093	−0.006		0.260		−0.089	−0.017	−3.83	240.99			−2.78	242.96
161	231	0.225		0.100	−0.012		0.252		−0.099	−0.012	−4.45	249.63			−3.29	251.79
162	232	0.225		0.107	−0.021		0.252		−0.109	−0.005	−4.58	257.10			−3.22	259.53
163	233	0.217		0.107	−0.025		0.242		−0.111	0.000	−4.76	266.35			−3.37	268.89
164	234	0.208		0.107	−0.028		0.232		−0.113	0.003	−4.40	274.47			−2.94	277.15
Z = 71 (Lu)																
75	146	0.217		0.093	−0.040		0.240		−0.096	0.017	−1.17	−6.43			−1.27	−5.00
76	147	−0.208		0.053	−0.004		−0.216		−0.042	0.015	0.36	−10.80			0.29	−9.45
77	148	−0.183		0.053	0.006		−0.190		−0.047	0.005	−0.08	−15.08			−0.14	−13.82
78	149	−0.175		0.047	0.006		−0.182		−0.041	0.003	−0.80	−21.14			−0.84	−19.97
79	150	−0.158		0.053	0.014		−0.164		−0.050	−0.003	−1.27	−24.92			−1.31	−23.84
80	151	−0.150		0.047	0.010		−0.156		−0.045	−0.001	−1.88	−30.34			−1.91	−29.35
81	152	−0.075		0.013	0.001		−0.079		−0.013	0.000	−2.28	−33.53			−2.29	−32.60
82	153	0.008		−0.007	0.000		0.008		0.008	0.000	−3.30	−38.84			−3.30	−38.00
83	154	−0.050		0.000	−0.001		−0.053		0.001	0.001	−2.32	−40.15			−2.32	−39.40
84	155	0.033		0.000	0.000		0.035		0.000	0.000	−1.42	−43.04			−1.42	−42.38
85	156	−0.100		−0.007	−0.004		−0.104		0.012	0.003	−0.35	−43.79			−0.36	−43.22
86	157	0.117		−0.013	−0.005		0.125		0.021	0.007	0.16	−46.59			0.15	−46.09
87	158	0.142		−0.020	0.001		0.152		0.033	0.003	0.61	−47.49	−47.34	0.110	0.59	−47.08
88	159	0.150		−0.013	0.004		0.161		0.026	−0.001	1.02	−49.92	−49.72	0.060	1.00	−49.58
89	160	0.167		−0.007	0.009		0.180		0.021	−0.007	1.32	−50.52			1.30	−50.26
90	161	0.183		0.000	0.008		0.198		0.015	−0.007	1.50	−52.72			1.49	−52.52
91	162	0.200		0.007	0.005		0.217		0.009	−0.005	1.65	−53.04			1.63	−52.92
92	163	0.200		0.013	0.005		0.217		0.002	−0.007	1.73	−54.90	−54.77	0.220	1.72	−54.84
93	164	0.208		0.013	0.005		0.226		0.003	−0.007	1.65	−55.04			1.64	−55.04
94	165	0.225		0.020	0.003		0.245		−0.002	−0.006	1.43	−56.78	−56.26	0.080	1.43	−56.83
95	166	0.233		0.013	0.004		0.254		0.008	−0.005	1.21	−56.65	−56.11	0.160	1.19	−56.76
96	167	0.250		0.033	−0.003		0.274		−0.013	−0.004	1.06	−57.91	−57.47	0.100	1.06	−58.06
97	168	0.250		0.033	−0.001		0.274		−0.013	−0.006	0.75	−57.46	−57.09	0.060	0.75	−57.67
98	169	0.258		0.040	−0.001		0.284		−0.020	−0.009	0.44	−58.49	−58.08	0.005	0.46	−58.73
99	170	0.267		0.040	0.002		0.294		−0.017	−0.012	0.07	−57.73	−57.31	0.019	0.09	−58.02
100	171	0.258		0.053	0.000		0.285		−0.035	−0.014	−0.17	−58.29	−57.83	0.004	−0.12	−58.59
101	172	0.267		0.053	0.003		0.295		−0.033	−0.017	−0.60	−57.23	−56.74	0.004	−0.55	−57.57
102	173	0.258		0.067	−0.002		0.286		−0.052	−0.016	−0.74	−57.32	−56.89	0.003	−0.65	−57.67
103	174	0.258		0.067	0.000		0.286		−0.052	−0.018	−1.18	−55.90	−55.58	0.003	−1.10	−56.29
104	175	0.258		0.080	−0.011		0.287		−0.069	−0.011	−1.23	−55.53	−55.17	0.003	−1.10	−55.91

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 71 (Lu)																
105	176	0.250		0.080	−0.012		0.278		−0.071	−0.009	−1.62	−53.72	−53.39	0.003	−1.49	−54.13
106	177	0.250		0.087	−0.019		0.278		−0.080	−0.005	−1.81	−53.15	−52.40	0.003	−1.63	−53.54
107	178	0.250		0.093	−0.021		0.279		−0.088	−0.004	−2.22	−51.01	−50.36	0.024	−2.02	−51.42
108	179	0.250		0.100	−0.023		0.279		−0.096	−0.004	−2.25	−49.94	−49.12	0.040	−2.00	−50.31
109	180	0.250		0.107	−0.031		0.280		−0.106	0.001	−2.42	−47.24	−46.69	0.070	−2.13	−47.60
110	181	0.250		0.107	−0.039		0.279		−0.107	0.009	−2.30	−45.69			−1.95	−46.00
111	182	0.242		0.113	−0.044		0.270		−0.116	0.013	−2.48	−42.67			−2.07	−42.96
112	183	0.242		0.120	−0.052		0.270		−0.126	0.019	−2.24	−40.68			−1.71	−40.85
113	184	0.233		0.120	−0.056		0.260		−0.128	0.024	−2.58	−37.52			−2.00	−37.66
114	185	0.233		0.120	−0.062		0.259		−0.129	0.030	−2.33	−35.20			−1.65	−35.25
115	186	0.217		0.120	−0.058		0.241		−0.131	0.028	−2.56	−31.63			−1.90	−31.71
116	187	0.200		0.107	−0.052		0.221		−0.117	0.028	−2.29	−28.98			−1.70	−29.15
117	188	0.183		0.093	−0.045		0.201		−0.102	0.026	−2.39	−24.99			−1.93	−25.29
118	189	0.150		0.073	−0.031		0.164		−0.081	0.019	−1.99	−21.91			−1.69	−22.38
119	190	−0.192		0.047	−0.013		−0.200		−0.038	0.021	−1.83	−17.38			−1.66	−17.98
120	191	−0.183		0.040	−0.017		−0.190		−0.031	0.023	−2.16	−14.75			−1.99	−15.35
121	192	−0.158		0.033	−0.011		−0.165		−0.027	0.016	−2.62	−10.56			−2.52	−11.22
122	193	−0.133		0.033	−0.010		−0.139		−0.030	0.014	−2.81	−7.50			−2.71	−8.17
123	194	−0.100		0.033	0.006		−0.104		−0.034	−0.002	−3.74	−3.52			−3.67	−4.21
124	195	−0.075		0.033	0.012		−0.078		−0.036	−0.008	−4.14	−0.41			−4.07	−1.08
125	196	−0.025		0.007	0.001		−0.026		−0.008	−0.001	−5.22	3.69			−5.22	2.96
126	197	0.008		0.000	0.000		0.008		0.000	0.000	−5.49	7.21			−5.49	6.48
127	198	−0.025		−0.007	0.000		−0.026		0.008	0.000	−4.66	13.47			−4.65	12.76
128	199	−0.017		0.000	−0.001		−0.018		0.000	0.001	−3.64	18.53			−3.64	17.84
129	200	0.050		−0.020	−0.008		0.053		0.025	0.009	−2.24	25.61			−2.20	24.97
130	201	0.058	0.054	−0.027	0.003	−0.010	0.063	−0.074	0.035	0.001	−1.01	31.13			−0.88	30.60
131	202	0.092		−0.040	−0.015		0.099		0.052	0.021	−0.45	37.62			−0.26	37.17
132	203	0.100		−0.047	−0.010		0.108		0.062	0.017	0.33	42.93			0.55	42.54
133	204	0.117		−0.047	−0.009		0.126		0.063	0.017	0.67	49.43			0.90	49.08
134	205	0.125		−0.047	−0.008		0.135		0.064	0.017	1.30	54.84			1.55	54.53
135	206	0.142		−0.060	−0.017		0.154		0.083	0.030	1.36	61.28			1.82	61.21
136	207	0.150		−0.060	−0.010		0.162		0.084	0.024	1.63	66.56			2.06	66.49
137	208	0.150		−0.067	−0.011		0.163		0.093	0.027	1.50	73.04			2.00	73.08
138	209	0.167		−0.053	−0.003		0.180		0.078	0.016	1.59	78.38			1.96	78.31
139	210	0.175		−0.053	0.002		0.189		0.079	0.012	1.33	84.94			1.69	84.90
140	211	0.183		−0.047	0.008		0.197		0.073	0.005	1.38	90.45			1.72	90.42
141	212	0.192		−0.040	0.012		0.207		0.066	−0.001	1.06	97.17			1.36	97.14
142	213	0.200		−0.040	0.017		0.215		0.068	−0.005	1.05	102.84			1.40	102.90
143	214	0.200		−0.033	0.021		0.215		0.059	−0.011	0.64	109.68			0.97	109.76
144	215	0.200		−0.027	0.024		0.216		0.052	−0.016	0.60	115.52			0.94	115.66
145	216	0.208		−0.020	0.029		0.225		0.045	−0.022	0.04	122.41			0.43	122.65
146	217	0.208		−0.013	0.029		0.225		0.037	−0.024	−0.02	128.44			0.37	128.74
147	218	0.208		−0.007	0.034		0.225		0.030	−0.030	−0.52	135.59			−0.06	136.00
148	219	0.217		0.000	0.034		0.236		0.024	−0.032	−0.94	141.46			−0.44	141.96
149	220	0.217		0.007	0.032		0.236		0.015	−0.032	−1.42	148.82			−0.95	149.35
150	221	0.217		0.020	0.027		0.237		−0.001	−0.030	−1.49	155.24			−1.03	155.81
151	222	0.225		0.033	0.026		0.247		−0.015	−0.032	−2.11	162.66			−1.58	163.34
152	223	0.233		0.047	0.025		0.257		−0.030	−0.035	−2.18	169.27			−1.53	170.13
153	224	0.225		0.047	0.025		0.248		−0.032	−0.035	−2.49	177.17			−1.85	178.09
154	225	0.225		0.053	0.020		0.249		−0.040	−0.032	−2.39	184.14			−1.77	185.10
155	226	0.225		0.060	0.015		0.249		−0.049	−0.029	−2.72	192.20			−2.08	193.24
156	227	0.225		0.067	0.011		0.249		−0.057	−0.026	−2.65	199.32			−1.97	200.46
157	228	0.225		0.073	0.007		0.250		−0.065	−0.024	−3.11	207.44			−2.39	208.68
158	229	0.225		0.080	0.002		0.250		−0.074	−0.021	−3.17	214.61			−2.37	216.00
159	230	0.225		0.087	−0.002		0.251		−0.083	−0.019	−3.81	222.71			−2.93	224.24
160	231	0.225		0.093	−0.010		0.251		−0.091	−0.013	−4.02	229.91			−3.04	231.60
161	232	0.225		0.100	−0.016		0.251		−0.100	−0.008	−4.69	238.15			−3.58	240.04

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 71 (Lu)																
162	233	0.217		0.107	−0.023		0.242		−0.111	−0.002	−4.85	245.56			−3.55	247.73
163	234	0.208		0.107	−0.026		0.232		−0.113	0.002	−4.99	254.49			−3.66	256.76
164	235	0.208		0.107	−0.032		0.232		−0.113	0.007	−4.81	262.42			−3.36	264.87
165	236	0.200		0.113	−0.036		0.223		−0.122	0.011	−4.94	271.52			−3.29	274.25
166	237	0.200		0.113	−0.043		0.222		−0.123	0.018	−4.73	279.64			−2.92	282.61
Z = 72 (Hf)																
77	149	−0.167		0.053	0.011		−0.173		−0.049	0.000	−0.33	−7.26			−0.38	−5.77
78	150	−0.158		0.047	0.010		−0.164		−0.044	−0.001	−1.14	−13.98			−1.18	−12.57
79	151	−0.150		0.053	0.017		−0.156		−0.052	−0.007	−1.64	−17.85			−1.67	−16.56
80	152	−0.142		0.047	0.012		−0.148		−0.046	−0.004	−2.33	−23.90			−2.35	−22.69
81	153	−0.075		0.013	0.002		−0.079		−0.013	−0.001	−2.82	−27.26			−2.83	−26.14
82	154	0.008		0.000	−0.001		0.008		0.000	0.001	−3.98	−33.25			−3.98	−32.22
83	155	−0.050		0.000	0.000		−0.053		0.001	0.000	−2.88	−34.53			−2.89	−33.59
84	156	0.033		0.007	−0.001		0.035		−0.008	0.001	−2.02	−37.99			−2.02	−37.14
85	157	0.083		−0.007	−0.013		0.089		0.011	0.014	−0.96	−38.82			−0.97	−38.06
86	158	0.100	0.016	−0.013	0.001	−0.007	0.107	−0.022	0.020	0.001	−0.10	−41.80			−0.11	−41.13
87	159	0.125		−0.020	−0.001		0.134		0.031	0.005	0.28	−42.83			0.27	−42.25
88	160	0.142		−0.013	0.001		0.152		0.024	0.002	0.74	−45.74	−46.06	0.040	0.73	−45.24
89	161	0.150		−0.007	0.004		0.161		0.018	−0.002	1.13	−46.32			1.12	−45.90
90	162	0.167		0.000	0.005		0.180		0.012	−0.004	1.38	−48.98	−49.18	0.014	1.37	−48.63
91	163	0.183		0.000	0.004		0.198		0.015	−0.003	1.58	−49.32			1.56	−49.05
92	164	0.192		0.007	0.006		0.208		0.008	−0.006	1.72	−51.63			1.72	−51.42
93	165	0.200		0.007	0.005		0.217		0.009	−0.005	1.74	−51.73			1.73	−51.59
94	166	0.208		0.013	0.004		0.226		0.003	−0.006	1.68	−53.82			1.68	−53.74
95	167	0.225		0.007	0.004		0.245		0.014	−0.004	1.47	−53.74			1.46	−53.73
96	168	0.233		0.020	0.003		0.254		−0.001	−0.006	1.27	−55.55			1.28	−55.58
97	169	0.250		0.020	0.003		0.274		0.003	−0.006	1.02	−55.11	−54.81	0.080	1.02	−55.21
98	170	0.250		0.027	0.004		0.274		−0.005	−0.009	0.76	−56.58			0.78	−56.71
99	171	0.258		0.033	0.006		0.284		−0.010	−0.013	0.42	−55.85			0.44	−56.04
100	172	0.258		0.040	0.004		0.284		−0.019	−0.013	0.20	−56.89	−56.39	0.050	0.24	−57.10
101	173	0.267		0.047	0.006		0.295		−0.025	−0.018	−0.17	−55.82			−0.12	−56.08
102	174	0.258		0.053	0.002		0.285		−0.035	−0.015	−0.38	−56.47	−55.85	0.003	−0.31	−56.75
103	175	0.258		0.060	0.002		0.286		−0.043	−0.018	−0.80	−55.09	−54.49	0.003	−0.73	−55.41
104	176	0.250		0.073	−0.009		0.277		−0.062	−0.010	−0.90	−55.26	−54.58	0.003	−0.79	−55.58
105	177	0.250		0.073	−0.011		0.277		−0.062	−0.008	−1.33	−53.54	−52.89	0.003	−1.22	−53.91
106	178	0.250		0.087	−0.020		0.278		−0.080	−0.004	−1.53	−53.45	−52.45	0.003	−1.36	−53.79
107	179	0.250		0.087	−0.022		0.278		−0.081	−0.002	−1.97	−51.40	−50.47	0.003	−1.79	−51.77
108	180	0.250		0.100	−0.025		0.279		−0.096	−0.002	−1.99	−50.79	−49.79	0.003	−1.74	−51.11
109	181	0.250		0.107	−0.034		0.279		−0.106	0.004	−2.19	−48.17	−47.42	0.003	−1.89	−48.47
110	182	0.242		0.107	−0.040		0.270		−0.109	0.011	−2.16	−47.16	−46.06	0.007	−1.80	−47.43
111	183	0.242		0.113	−0.049		0.270		−0.117	0.018	−2.36	−44.23	−43.29	0.030	−1.93	−44.46
112	184	0.233		0.120	−0.054		0.260		−0.128	0.022	−2.25	−42.82	−41.50	0.040	−1.71	−42.96
113	185	0.233		0.127	−0.062		0.260		−0.137	0.028	−2.38	−39.50			−1.73	−39.55
114	186	0.225		0.120	−0.065		0.250		−0.131	0.034	−2.42	−37.92			−1.73	−37.94
115	187	0.200		0.113	−0.056		0.221		−0.125	0.030	−2.67	−34.42			−2.07	−34.56
116	188	0.192		0.100	−0.051		0.212		−0.110	0.029	−2.47	−32.29			−1.94	−32.51
117	189	0.167		0.087	−0.041		0.183		−0.096	0.025	−2.52	−28.30			−2.12	−28.65
118	190	0.150		0.073	−0.033		0.164		−0.081	0.021	−2.46	−26.01			−2.15	−26.47
119	191	−0.183		0.040	−0.013		−0.190		−0.031	0.019	−2.25	−21.47			−2.12	−22.11
120	192	−0.175		0.040	−0.015		−0.182		−0.032	0.021	−2.60	−19.31			−2.45	−19.93
121	193	−0.150		0.033	−0.009		−0.156		−0.028	0.014	−3.12	−15.22			−3.03	−15.90
122	194	−0.117		0.027	−0.001		−0.122		−0.025	0.004	−3.48	−12.77			−3.42	−13.50
123	195	−0.092		0.033	0.007		−0.096		−0.035	−0.003	−4.33	−8.74			−4.27	−9.46
124	196	−0.075		0.033	0.012		−0.078		−0.036	−0.008	−4.76	−6.09			−4.68	−6.79
125	197	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−5.81	−2.00			−5.81	−2.77
126	198	0.008		0.000	0.000		0.008		0.000	0.000	−6.10	1.06			−6.10	0.30
127	199	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−5.26	7.30			−5.26	6.55

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 72 (Hf)																
128	200	0.017		0.000	0.000		0.018		0.000	0.000	−4.24	11.93			−4.24	11.19
129	201	0.033		−0.013	−0.001		0.035		0.016	0.002	−3.03	18.79			−3.02	18.07
130	202	0.042	0.038	−0.013	0.001	−0.005	0.045	−0.052	0.017	0.001	−1.71	23.98			−1.66	23.31
131	203	0.083		−0.040	−0.016		0.089		0.051	0.021	−0.81	30.78			−0.62	30.26
132	204	0.092		−0.040	−0.013		0.099		0.052	0.019	0.01	35.71			0.20	35.22
133	205	0.100	0.052	−0.047	0.007	−0.009	0.108	−0.072	0.063	0.002	0.51	42.34			0.75	41.92
134	206	0.117		−0.047	−0.008		0.126		0.063	0.016	0.99	47.18			1.23	46.78
135	207	0.142		−0.053	−0.019		0.154		0.074	0.031	1.35	53.89			1.75	53.69
136	208	0.150		−0.053	−0.012		0.162		0.075	0.024	1.66	58.81			2.03	58.59
137	209	0.150		−0.060	−0.012		0.163		0.084	0.026	1.54	65.27			1.98	65.15
138	210	0.158		−0.053	−0.005		0.171		0.076	0.018	1.74	70.30			2.09	70.12
139	211	0.167		−0.053	−0.001		0.180		0.078	0.014	1.49	76.86			1.84	76.71
140	212	0.183		−0.047	0.007		0.197		0.073	0.006	1.54	81.96			1.87	81.82
141	213	0.192		−0.047	0.012		0.207		0.075	0.001	1.23	88.67			1.58	88.58
142	214	0.200		−0.040	0.015		0.216		0.068	−0.003	1.28	93.99			1.61	93.93
143	215	0.200		−0.033	0.019		0.216		0.059	−0.009	0.87	100.81			1.19	100.76
144	216	0.200		−0.027	0.021		0.216		0.052	−0.013	0.82	106.25			1.14	106.25
145	217	0.208		−0.020	0.026		0.225		0.045	−0.019	0.32	113.18			0.67	113.25
146	218	0.208		−0.013	0.026		0.225		0.037	−0.021	0.26	118.82			0.62	118.94
147	219	0.208		−0.007	0.031		0.225		0.030	−0.027	−0.22	125.97			0.19	126.19
148	220	0.208		0.000	0.029		0.226		0.021	−0.027	−0.33	131.77			0.08	132.03
149	221	0.217		0.013	0.027		0.236		0.007	−0.028	−1.06	138.85			−0.65	139.16
150	222	0.217		0.020	0.024		0.237		−0.002	−0.027	−1.17	144.85			−0.76	145.21
151	223	0.217		0.027	0.027		0.238		−0.010	−0.032	−1.71	152.32			−1.22	152.81
152	224	0.225		0.040	0.027		0.248		−0.023	−0.035	−1.85	158.48			−1.24	159.14
153	225	0.217		0.040	0.024		0.239		−0.025	−0.032	−2.05	166.48			−1.50	167.13
154	226	0.217		0.047	0.020		0.239		−0.034	−0.030	−2.01	173.01			−1.46	173.73
155	227	0.208		0.053	0.017		0.229		−0.043	−0.028	−2.07	181.33			−1.51	182.11
156	228	0.208		0.060	0.013		0.230		−0.052	−0.026	−2.09	187.99			−1.50	188.86
157	229	0.208		0.067	0.010		0.230		−0.061	−0.024	−2.61	196.02			−1.96	197.01
158	230	0.217		0.080	0.002		0.241		−0.075	−0.020	−2.93	202.56			−2.15	203.74
159	231	0.217		0.087	−0.002		0.242		−0.084	−0.018	−3.62	210.60			−2.75	211.92
160	232	0.217		0.093	−0.010		0.242		−0.092	−0.012	−3.86	217.40			−2.89	218.89
161	233	0.217		0.100	−0.015		0.242		−0.101	−0.009	−4.56	225.59			−3.47	227.27
162	234	0.217		0.107	−0.025		0.242		−0.111	0.000	−4.77	232.60			−3.47	234.55
163	235	0.208		0.107	−0.028		0.232		−0.113	0.003	−4.98	241.44			−3.65	243.50
164	236	0.200		0.107	−0.031		0.222		−0.114	0.007	−4.70	249.11			−3.30	251.31
165	237	0.200		0.113	−0.039		0.223		−0.123	0.014	−5.02	258.02			−3.36	260.54
166	238	0.200		0.113	−0.045		0.222		−0.123	0.020	−4.81	265.78			−2.98	268.54
167	239	0.192		0.113	−0.050		0.213		−0.125	0.026	−5.15	274.82			−3.17	277.79
168	240	0.158		0.080	−0.024		0.173		−0.087	0.010	−3.26	284.42			−2.35	286.41
Z = 73 (Ta)																
78	151	−0.158		0.047	0.008		−0.164		−0.044	0.001	−1.81	−4.33			−1.86	−2.70
79	152	−0.150		0.053	0.017		−0.156		−0.052	−0.007	−2.33	−8.78			−2.38	−7.27
80	153	−0.142		0.047	0.009		−0.148		−0.046	−0.001	−3.03	−14.92			−3.07	−13.50
81	154	−0.083		0.020	0.003		−0.087		−0.020	−0.001	−3.49	−18.78			−3.50	−17.44
82	155	0.008		0.000	0.000		0.008		0.000	0.000	−4.67	−24.87			−4.67	−23.63
83	156	−0.050		0.000	0.000		−0.053		0.001	0.000	−3.53	−26.64			−3.54	−25.49
84	157	0.042		0.000	0.000		0.045		0.001	0.000	−2.71	−30.22			−2.72	−29.17
85	158	0.083		0.000	−0.007		0.089		0.003	0.007	−1.52	−31.44			−1.53	−30.50
86	159	0.100		−0.007	−0.004		0.107		0.012	0.005	−0.79	−34.62			−0.80	−33.76
87	160	0.125		−0.013	−0.003		0.134		0.022	0.005	−0.31	−36.09			−0.32	−35.33
88	161	0.133		−0.007	0.000		0.143		0.016	0.002	0.24	−38.97			0.22	−38.30
89	162	0.150		0.000	0.002		0.161		0.010	−0.001	0.62	−40.09	−39.90	0.120	0.59	−39.51
90	163	0.158		0.007	0.002		0.170		0.002	−0.003	0.93	−42.75	−42.54	0.080	0.91	−42.24
91	164	0.175		0.013	0.004		0.189		−0.002	−0.006	1.18	−43.55			1.15	−43.13
92	165	0.183		0.020	0.003		0.199		−0.010	−0.006	1.38	−45.88			1.36	−45.53

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 73 (Ta)																
93	166	0.200		0.013	0.003		0.217		0.002	−0.005	1.46	−46.42			1.43	−46.15
94	167	0.200		0.020	0.002		0.217		−0.007	−0.005	1.45	−48.52			1.44	−48.31
95	168	0.208		0.020	0.002		0.226		−0.006	−0.005	1.38	−48.80			1.36	−48.67
96	169	0.217		0.020	0.002		0.236		−0.004	−0.006	1.18	−50.67			1.17	−50.59
97	170	0.233		0.020	0.002		0.254		−0.001	−0.005	0.97	−50.69			0.96	−50.68
98	171	0.233		0.027	0.002		0.255		−0.009	−0.007	0.74	−52.19			0.74	−52.23
99	172	0.250		0.033	0.003		0.274		−0.013	−0.010	0.47	−51.89	−51.47	0.190	0.46	−51.99
100	173	0.250		0.040	0.002		0.275		−0.021	−0.011	0.26	−52.97			0.28	−53.10
101	174	0.258		0.047	0.002		0.285		−0.028	−0.014	−0.04	−52.32			−0.02	−52.50
102	175	0.250		0.060	−0.004		0.276		−0.046	−0.011	−0.27	−53.04			−0.22	−53.25
103	176	0.250		0.060	−0.001		0.277		−0.045	−0.014	−0.69	−52.14	−51.47	0.100	−0.65	−52.40
104	177	0.250		0.073	−0.013		0.277		−0.063	−0.006	−0.81	−52.39	−51.73	0.004	−0.73	−52.66
105	178	0.250		0.073	−0.014		0.277		−0.063	−0.005	−1.23	−51.13	−50.54	0.100	−1.15	−51.45
106	179	0.242		0.080	−0.020		0.268		−0.074	−0.001	−1.53	−51.21	−50.37	0.006	−1.41	−51.52
107	180	0.242		0.087	−0.023		0.269		−0.082	0.000	−1.93	−49.59	−48.94	0.003	−1.80	−49.92
108	181	0.242		0.093	−0.026		0.269		−0.090	0.001	−2.02	−49.09	−48.44	0.003	−1.84	−49.42
109	182	0.233		0.100	−0.031		0.259		−0.101	0.005	−2.29	−47.00	−46.44	0.003	−2.07	−47.33
110	183	0.233		0.107	−0.040		0.260		−0.110	0.012	−2.21	−46.00	−45.30	0.003	−1.90	−46.27
111	184	0.225		0.107	−0.044		0.250		−0.112	0.017	−2.52	−43.64	−42.84	0.026	−2.19	−43.91
112	185	0.225		0.113	−0.052		0.250		−0.121	0.023	−2.46	−42.33	−41.40	0.014	−2.03	−42.53
113	186	0.217		0.120	−0.057		0.241		−0.131	0.027	−2.76	−39.64	−38.62	0.060	−2.25	−39.79
114	187	0.208		0.113	−0.058		0.230		−0.124	0.031	−2.84	−38.15			−2.31	−38.29
115	188	0.200		0.113	−0.058		0.221		−0.125	0.032	−3.03	−35.03			−2.48	−35.19
116	189	0.183		0.100	−0.050		0.202		−0.111	0.029	−2.91	−33.03			−2.44	−33.28
117	190	0.158		0.087	−0.038		0.173		−0.097	0.023	−3.00	−29.53			−2.66	−29.92
118	191	0.150		0.080	−0.034		0.164		−0.089	0.021	−3.12	−27.47			−2.82	−27.91
119	192	−0.183		0.040	−0.013		−0.190		−0.031	0.019	−2.69	−23.15			−2.57	−23.79
120	193	−0.175		0.040	−0.015		−0.182		−0.032	0.021	−3.07	−21.05			−2.93	−21.68
121	194	−0.150		0.033	−0.009		−0.156		−0.028	0.014	−3.63	−17.44			−3.55	−18.14
122	195	−0.117		0.033	0.001		−0.122		−0.032	0.003	−4.03	−15.07			−3.97	−15.80
123	196	−0.092		0.033	0.007		−0.096		−0.035	−0.003	−4.87	−11.47			−4.81	−12.20
124	197	−0.075		0.033	0.013		−0.078		−0.036	−0.009	−5.30	−8.86			−5.23	−9.58
125	198	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−6.32	−5.17			−6.32	−5.96
126	199	0.008		0.000	0.002		0.008		0.000	−0.002	−6.59	−2.12			−6.59	−2.91
127	200	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−5.75	3.69			−5.74	2.91
128	201	0.017		0.000	0.003		0.018		0.000	−0.003	−4.74	8.27			−4.74	7.49
129	202	0.042		−0.013	−0.001		0.045		0.016	0.002	−3.43	14.81			−3.42	14.05
130	203	0.050		−0.013	−0.003		0.053		0.017	0.004	−2.20	19.88			−2.18	19.14
131	204	0.075		−0.033	−0.015		0.081		0.042	0.019	−1.34	26.22			−1.21	25.59
132	205	0.092		−0.033	−0.013		0.099		0.043	0.018	−0.43	31.21			−0.30	30.61
133	206	0.100		−0.040	−0.009		0.107		0.053	0.015	0.05	37.40			0.20	36.83
134	207	0.108		−0.040	−0.007		0.116		0.054	0.013	0.61	42.29			0.77	41.75
135	208	0.133		−0.047	−0.011		0.143		0.065	0.020	1.03	48.66			1.28	48.23
136	209	0.142		−0.047	−0.010		0.153		0.066	0.020	1.38	53.58			1.65	53.19
137	210	0.150		−0.053	−0.011		0.162		0.075	0.023	1.33	59.71			1.68	59.42
138	211	0.150		−0.047	−0.005		0.162		0.067	0.016	1.60	64.78			1.87	64.44
139	212	0.167		−0.047	−0.002		0.180		0.070	0.014	1.32	70.91			1.61	70.60
140	213	0.175		−0.040	0.004		0.188		0.063	0.006	1.39	76.01			1.64	75.69
141	214	0.183		−0.040	0.009		0.197		0.064	0.002	1.11	82.34			1.37	82.06
142	215	0.192		−0.033	0.012		0.207		0.057	−0.002	1.16	87.64			1.41	87.39
143	216	0.200		−0.027	0.016		0.216		0.052	−0.008	0.82	94.14			1.07	93.92
144	217	0.200		−0.020	0.018		0.216		0.043	−0.011	0.77	99.55			1.02	99.37
145	218	0.200		−0.013	0.020		0.216		0.035	−0.015	0.40	106.22			0.65	106.07
146	219	0.200		−0.007	0.021		0.216		0.027	−0.018	0.34	111.83			0.60	111.73
147	220	0.208		0.000	0.023		0.226		0.021	−0.021	−0.18	118.56			0.11	118.53
148	221	0.208		0.013	0.020		0.226		0.005	−0.022	−0.28	124.34			0.01	124.35
149	222	0.208		0.013	0.023		0.226		0.005	−0.024	−0.81	131.25			−0.49	131.33

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 73 (Ta)																
150	223	0.208		0.027	0.020		0.227		−0.012	−0.025	−0.91	137.23			−0.57	137.38
151	224	0.208		0.033	0.023		0.228		−0.019	−0.029	−1.41	144.36			−1.00	144.63
152	225	0.217		0.040	0.024		0.239		−0.025	−0.032	−1.80	150.26			−1.29	150.67
153	226	0.208		0.040	0.020		0.228		−0.028	−0.028	−1.76	158.12			−1.32	158.51
154	227	0.208		0.047	0.016		0.229		−0.036	−0.026	−1.78	164.57			−1.33	165.02
155	228	0.200		0.047	0.014		0.220		−0.038	−0.023	−1.98	172.37			−1.56	172.85
156	229	0.200		0.053	0.010		0.220		−0.046	−0.021	−2.03	178.98			−1.59	179.54
157	230	0.200		0.060	0.007		0.220		−0.054	−0.019	−2.58	186.62			−2.08	187.28
158	231	0.200		0.067	0.002		0.221		−0.063	−0.016	−2.77	193.28			−2.21	194.05
159	232	0.208		0.080	−0.002		0.231		−0.078	−0.016	−3.63	200.78			−2.92	201.76
160	233	0.208		0.087	−0.009		0.231		−0.087	−0.010	−3.91	207.51			−3.10	208.67
161	234	0.208		0.093	−0.014		0.231		−0.094	−0.007	−4.61	215.35			−3.69	216.67
162	235	0.208		0.100	−0.023		0.231		−0.104	0.000	−4.86	222.30			−3.76	223.86
163	236	0.200		0.100	−0.026		0.222		−0.106	0.004	−5.10	230.76			−3.97	232.41
164	237	0.200		0.107	−0.034		0.222		−0.115	0.010	−4.99	238.24			−3.61	240.21
165	238	0.192		0.107	−0.040		0.213		−0.117	0.017	−5.24	246.86			−3.72	249.03
166	239	0.192		0.107	−0.047		0.212		−0.118	0.024	−5.07	254.57			−3.38	256.98
167	240	0.175		0.093	−0.039		0.193		−0.102	0.021	−4.81	263.86			−3.52	265.93
168	241	0.158		0.080	−0.026		0.173		−0.087	0.012	−3.82	272.55			−2.91	274.32
169	242	0.150		0.080	−0.030		0.164		−0.089	0.017	−4.06	281.49			−3.09	283.39
170	243	0.150		0.080	−0.038		0.164		−0.089	0.024	−4.21	289.21			−3.07	291.35
Z = 74 (W)																
80	154	−0.117		0.040	0.011		−0.122		−0.041	−0.005	−3.65	−7.65			−3.67	−5.99
81	155	−0.067		0.013	0.002		−0.070		−0.013	−0.001	−4.21	−11.70			−4.22	−10.13
82	156	0.008		0.000	−0.001		0.008		0.000	0.001	−5.24	−18.17			−5.24	−16.70
83	157	−0.050		0.000	0.001		−0.053		0.001	−0.001	−4.25	−20.16			−4.26	−18.81
84	158	0.017		0.000	−0.002		0.018		0.000	0.002	−3.44	−24.28			−3.44	−23.02
85	159	0.075		0.000	−0.018		0.080		0.002	0.018	−2.08	−25.42			−2.09	−24.26
86	160	0.083		0.000	−0.002		0.089		0.003	0.002	−1.27	−29.04			−1.28	−27.98
87	161	0.108		−0.013	−0.006		0.116		0.020	0.008	−0.64	−30.43			−0.66	−29.48
88	162	0.125		−0.007	−0.003		0.134		0.015	0.004	−0.11	−33.85			−0.12	−32.98
89	163	0.142		0.000	0.000		0.153		0.008	0.001	0.31	−35.00			0.29	−34.23
90	164	0.150		0.000	0.002		0.161		0.010	−0.001	0.68	−38.11	−38.36	0.040	0.66	−37.43
91	165	0.158		0.007	0.005		0.170		0.002	−0.006	0.96	−38.95			0.94	−38.36
92	166	0.167		0.013	0.003		0.181		−0.004	−0.005	1.20	−41.74	−41.90	0.015	1.19	−41.22
93	167	0.183		0.013	0.003		0.198		−0.001	−0.005	1.33	−42.31			1.31	−41.87
94	168	0.192		0.013	0.002		0.208		0.000	−0.004	1.40	−44.83			1.38	−44.47
95	169	0.200		0.013	0.003		0.217		0.002	−0.005	1.39	−45.11			1.38	−44.83
96	170	0.208		0.020	0.002		0.226		−0.006	−0.005	1.28	−47.40			1.28	−47.17
97	171	0.225		0.013	0.003		0.245		0.006	−0.005	1.15	−47.40			1.14	−47.24
98	172	0.233		0.020	0.004		0.254		−0.001	−0.007	1.00	−49.31			1.00	−49.21
99	173	0.242		0.027	0.005		0.265		−0.007	−0.010	0.77	−49.02			0.77	−48.99
100	174	0.242		0.033	0.003		0.265		−0.014	−0.010	0.61	−50.55			0.62	−50.56
101	175	0.258		0.040	0.004		0.284		−0.019	−0.013	0.37	−49.90			0.38	−49.97
102	176	0.242		0.047	0.000		0.266		−0.032	−0.011	0.10	−51.14			0.14	−51.25
103	177	0.250		0.053	0.001		0.276		−0.037	−0.014	−0.24	−50.22			−0.20	−50.38
104	178	0.242		0.060	−0.008		0.267		−0.048	−0.007	−0.47	−51.05	−50.44	0.100	−0.40	−51.24
105	179	0.242		0.067	−0.011		0.268		−0.057	−0.006	−0.86	−49.83	−49.31	0.016	−0.79	−50.06
106	180	0.233		0.073	−0.017		0.258		−0.067	−0.001	−1.21	−50.41	−49.65	0.005	−1.11	−50.65
107	181	0.233		0.080	−0.018		0.258		−0.075	−0.002	−1.61	−48.85	−48.26	0.005	−1.50	−49.13
108	182	0.233		0.087	−0.023		0.259		−0.084	0.001	−1.71	−48.84	−48.25	0.003	−1.55	−49.10
109	183	0.225		0.093	−0.027		0.250		−0.093	0.004	−2.00	−46.83	−46.37	0.003	−1.82	−47.11
110	184	0.217		0.093	−0.033		0.240		−0.095	0.010	−2.02	−46.39	−45.71	0.003	−1.79	−46.66
111	185	0.217		0.100	−0.041		0.241		−0.105	0.017	−2.29	−44.03	−43.39	0.003	−2.01	−44.29
112	186	0.208		0.100	−0.044		0.230		−0.107	0.020	−2.38	−43.33	−42.51	0.003	−2.04	−43.56
113	187	0.200		0.107	−0.050		0.221		−0.117	0.026	−2.72	−40.73	−39.91	0.003	−2.32	−40.93
114	188	0.192		0.100	−0.049		0.212		−0.110	0.027	−2.71	−39.60	−38.67	0.004	−2.31	−39.83

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 74$ (W)																
115	189	0.183		0.100	−0.051		0.202		−0.111	0.030	−3.04	−36.68	−35.48	0.200	−2.61	−36.91
116	190	0.158		0.087	−0.039		0.173		−0.097	0.024	−2.90	−35.11	−34.31	0.160	−2.57	−35.46
117	191	0.150		0.080	−0.038		0.164		−0.089	0.024	−3.52	−32.17			−3.21	−32.57
118	192	0.142		0.073	−0.034		0.155		−0.082	0.022	−3.56	−30.47			−3.29	−30.93
119	193	−0.167		0.033	−0.013		−0.174		−0.026	0.018	−3.10	−26.17			−3.01	−26.82
120	194	−0.167		0.033	−0.015		−0.174		−0.026	0.020	−3.52	−24.55			−3.40	−25.19
121	195	−0.142		0.033	−0.007		−0.148		−0.029	0.012	−4.14	−21.04			−4.07	−21.74
122	196	−0.100		0.027	0.002		−0.105		−0.027	0.001	−4.65	−19.22			−4.60	−19.96
123	197	−0.083		0.033	0.008		−0.087		−0.035	−0.004	−5.51	−15.68			−5.45	−16.41
124	198	−0.067		0.033	0.012		−0.070		−0.036	−0.009	−6.05	−13.61			−5.98	−14.34
125	199	−0.017		0.000	0.001		−0.018		0.000	−0.001	−7.12	−10.01			−7.12	−10.81
126	200	0.008		0.000	0.000		0.008		0.000	0.000	−7.34	−7.34			−7.35	−8.15
127	201	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−6.47	−1.53			−6.47	−2.34
128	202	0.008		0.000	0.000		0.008		0.000	0.000	−5.53	2.56			−5.54	1.75
129	203	0.025		−0.007	0.001		0.026		0.009	−0.001	−4.34	8.94			−4.34	8.14
130	204	0.033		−0.007	−0.002		0.035		0.009	0.002	−3.08	13.62			−3.07	12.83
131	205	0.067		−0.027	−0.015		0.072		0.034	0.018	−1.92	20.22			−1.82	19.53
132	206	0.075		−0.027	−0.013		0.080		0.035	0.016	−0.97	24.84			−0.87	24.16
133	207	0.100	0.043	−0.040	0.005	−0.010	0.108	−0.060	0.054	0.002	−0.24	31.24			−0.08	30.64
134	208	0.100		−0.040	−0.009		0.107		0.053	0.015	0.30	35.71			0.47	35.12
135	209	0.117	0.051	−0.040	0.007	−0.010	0.126	−0.070	0.056	0.001	0.64	41.97			0.85	41.43
136	210	0.133		−0.040	−0.009		0.143		0.056	0.017	1.23	46.72			1.44	46.20
137	211	0.150		−0.053	−0.014		0.162		0.075	0.026	1.29	52.92			1.65	52.58
138	212	0.150		−0.047	−0.007		0.162		0.067	0.018	1.55	57.58			1.83	57.17
139	213	0.158		−0.053	−0.003		0.170		0.076	0.016	1.41	63.81			1.73	63.46
140	214	0.167		−0.047	0.003		0.180		0.070	0.009	1.51	68.54			1.79	68.18
141	215	0.183		−0.047	0.009		0.197		0.073	0.004	1.26	74.88			1.56	74.57
142	216	0.192		−0.040	0.011		0.207		0.066	0.000	1.33	79.81			1.62	79.50
143	217	0.192		−0.033	0.015		0.207		0.057	−0.005	1.01	86.29			1.26	85.99
144	218	0.200		−0.020	0.015		0.216		0.043	−0.008	0.97	91.33			1.21	91.03
145	219	0.200		−0.020	0.020		0.216		0.043	−0.013	0.55	97.92			0.81	97.68
146	220	0.200		−0.007	0.019		0.216		0.027	−0.016	0.55	103.21			0.79	102.98
147	221	0.208		−0.007	0.025		0.225		0.029	−0.021	0.04	109.92			0.35	109.79
148	222	0.208		0.013	0.018		0.226		0.004	−0.020	−0.01	115.36			0.26	115.24
149	223	0.208		0.013	0.022		0.226		0.005	−0.024	−0.54	122.25			−0.23	122.20
150	224	0.208		0.027	0.017		0.227		−0.012	−0.022	−0.62	127.87			−0.31	127.87
151	225	0.208		0.033	0.020		0.228		−0.019	−0.026	−1.10	135.00			−0.72	135.10
152	226	0.208		0.040	0.022		0.228		−0.027	−0.030	−1.16	140.85			−0.70	141.08
153	227	0.208		0.040	0.016		0.228		−0.028	−0.024	−1.42	148.38			−1.04	148.58
154	228	0.200		0.047	0.011		0.220		−0.038	−0.021	−1.32	154.59			−0.93	154.84
155	229	0.200		0.053	0.008		0.220		−0.046	−0.019	−1.71	162.19			−1.29	162.51
156	230	0.200		0.060	0.004		0.220		−0.055	−0.017	−1.78	168.40			−1.31	168.82
157	231	0.200		0.067	0.001		0.221		−0.063	−0.015	−2.33	176.02			−1.80	176.55
158	232	0.200		0.073	−0.004		0.221		−0.071	−0.012	−2.52	182.30			−1.93	182.95
159	233	0.200		0.080	−0.007		0.221		−0.080	−0.010	−3.26	189.91			−2.58	190.70
160	234	0.200		0.080	−0.012		0.221		−0.080	−0.005	−3.54	196.29			−2.83	197.16
161	235	0.200		0.087	−0.015		0.222		−0.089	−0.004	−4.26	204.09			−3.45	205.12
162	236	0.200		0.093	−0.020		0.222		−0.097	0.000	−4.54	210.65			−3.59	211.87
163	237	0.200		0.100	−0.027		0.222		−0.106	0.005	−4.92	218.95			−3.79	220.41
164	238	0.192		0.100	−0.031		0.213		−0.107	0.010	−4.72	226.16			−3.52	227.76
165	239	0.183		0.100	−0.033		0.203		−0.109	0.013	−4.89	234.84			−3.64	236.55
166	240	0.175		0.093	−0.036		0.193		−0.102	0.018	−4.53	242.39			−3.32	244.12
167	241	0.167		0.093	−0.039		0.184		−0.103	0.022	−4.75	251.19			−3.47	253.05
168	242	0.150		0.080	−0.028		0.164		−0.089	0.015	−3.76	259.53			−2.84	261.10
169	243	0.150		0.080	−0.035		0.164		−0.089	0.022	−4.31	268.15			−3.28	269.90
170	244	0.150		0.087	−0.043		0.164		−0.098	0.028	−4.64	275.33			−3.29	277.46
171	245	−0.150		0.000	−0.020		−0.156		0.010	0.018	−2.80	286.50			−2.53	287.62

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 74 (W)																
172	246	−0.150		0.000	−0.024		−0.156		0.010	0.022	−3.19	293.78			−2.85	295.05
173	247	0.100		0.047	−0.026		0.108		−0.053	0.021	−3.17	303.29			−2.66	304.79
Z = 75 (Re)																
81	156	−0.075		0.020	0.004		−0.079		−0.021	−0.002	−5.09	−2.46			−5.10	−0.65
82	157	0.025		0.007	−0.001		0.027		−0.008	0.001	−6.17	−9.06			−6.17	−7.36
83	158	−0.050		0.000	−0.002		−0.053		0.001	0.002	−5.09	−11.49			−5.10	−9.90
84	159	0.050		0.007	−0.002		0.053		−0.007	0.002	−4.30	−15.71			−4.31	−14.23
85	160	0.075		0.000	0.001		0.080		0.002	−0.001	−3.05	−17.48			−3.06	−16.10
86	161	0.075		0.007	−0.001		0.080		−0.006	0.000	−2.10	−21.03			−2.10	−19.76
87	*162*	*0.108*		*−0.007*	*−0.004*		*0.116*		*0.013*	*0.005*	*−1.49*	*−22.96*			*−1.51*	*−21.80*
88	163	0.117		0.000	−0.001		0.125		0.006	0.001	−0.83	−26.33			−0.85	−25.26
89	164	0.133		0.000	0.001		0.143		0.007	−0.001	−0.33	−27.89			−0.35	−26.93
90	165	0.142		0.007	0.001		0.153		0.000	−0.002	0.09	−31.03			0.07	−30.16
91	166	0.150		0.013	0.003		0.162		−0.006	−0.005	0.45	−32.30	−31.97	0.130	0.42	−31.53
92	167	0.150		0.013	0.003		0.162		−0.006	−0.005	0.81	−35.04	−34.86	0.090	0.79	−34.35
93	168	0.167		0.020	0.001		0.181		−0.012	−0.004	0.93	−36.11			0.91	−35.51
94	169	0.175		0.027	−0.002		0.190		−0.020	−0.003	1.08	−38.63			1.06	−38.10
95	170	0.183		0.027	−0.002		0.199		−0.019	−0.003	1.12	−39.36			1.10	−38.91
96	171	0.192		0.027	−0.002		0.209		−0.017	−0.003	1.07	−41.65			1.05	−41.27
97	172	0.200		0.027	−0.001		0.218		−0.016	−0.004	0.96	−42.12			0.93	−41.83
98	173	0.200		0.033	−0.003		0.218		−0.023	−0.004	0.89	−44.02			0.88	−43.78
99	174	0.225		0.027	0.002		0.246		−0.011	−0.007	0.64	−44.24			0.62	−44.08
100	175	0.217		0.040	−0.003		0.238		−0.029	−0.006	0.49	−45.81			0.49	−45.70
101	176	0.225		0.040	0.000		0.247		−0.027	−0.009	0.19	−45.69			0.19	−45.65
102	177	0.217		0.047	−0.005		0.238		−0.037	−0.006	0.00	−46.92			0.01	−46.92
103	178	0.225		0.053	−0.005		0.247		−0.043	−0.007	−0.34	−46.47	−45.78	0.210	−0.33	−46.54
104	179	0.217		0.060	−0.011		0.239		−0.053	−0.003	−0.61	−47.41	−46.60	0.050	−0.58	−47.50
105	180	0.225		0.067	−0.011		0.248		−0.060	−0.005	−0.97	−46.62	−45.84	0.030	−0.93	−46.77
106	181	0.217		0.073	−0.017		0.240		−0.070	0.000	−1.30	−47.24			−1.23	−47.41
107	182	0.217		0.073	−0.017		0.240		−0.070	0.000	−1.73	−46.18	−45.45	0.100	−1.66	−46.39
108	183	0.208		0.080	−0.021		0.230		−0.080	0.003	−1.95	−46.33	−45.81	0.009	−1.84	−46.55
109	184	0.208		0.087	−0.025		0.230		−0.089	0.005	−2.19	−44.74	−44.22	0.005	−2.06	−44.99
110	185	0.200		0.087	−0.031		0.221		−0.091	0.012	−2.19	−44.33	−43.83	0.003	−2.02	−44.58
111	186	0.200		0.093	−0.037		0.221		−0.099	0.016	−2.48	−42.44	−41.93	0.003	−2.27	−42.70
112	187	0.192		0.093	−0.040		0.212		−0.100	0.020	−2.48	−41.71	−41.22	0.003	−2.23	−41.96
113	188	0.192		0.100	−0.048		0.212		−0.109	0.026	−2.88	−39.61	−39.02	0.003	−2.57	−39.84
114	189	0.175		0.093	−0.043		0.192		−0.103	0.025	−2.85	−38.51	−37.99	0.009	−2.55	−38.78
115	190	0.167		0.093	−0.045		0.183		−0.104	0.027	−3.27	−36.13	−35.58	0.150	−2.94	−36.41
116	191	0.150		0.080	−0.036		0.164		−0.089	0.022	−3.48	−34.95	−34.36	0.011	−3.22	−35.33
117	192	0.150		0.080	−0.040		0.164		−0.090	0.026	−4.12	−32.49			−3.85	−32.87
118	193	0.142		0.080	−0.037		0.155		−0.090	0.024	−4.22	−30.90			−3.94	−31.30
119	194	0.125		0.067	−0.029		0.136		−0.076	0.020	−4.33	−27.60			−4.13	−28.11
120	195	−0.158		0.033	−0.014		−0.165		−0.027	0.018	−4.14	−25.41			−4.05	−26.05
121	196	−0.142		0.033	−0.006		−0.148		−0.029	0.011	−4.75	−22.34			−4.69	−23.02
122	197	−0.100		0.027	0.003		−0.105		−0.027	0.000	−5.36	−20.66			−5.32	−21.38
123	198	−0.083		0.033	0.008		−0.087		−0.035	−0.004	−6.20	−17.53			−6.15	−18.25
124	199	−0.067		0.033	0.012		−0.070		−0.036	−0.009	−6.74	−15.50			−6.68	−16.22
125	200	−0.033		0.013	0.004		−0.035		−0.015	−0.003	−7.62	−12.13			−7.61	−12.92
126	201	0.017		0.000	−0.001		0.018		0.000	0.001	−7.86	−9.53			−7.86	−10.33
127	202	0.025		−0.007	−0.005		0.027		0.009	0.005	−7.04	−4.19			−7.04	−5.00
128	203	0.025		0.000	−0.002		0.027		0.000	0.002	−5.97	0.00			−5.97	−0.81
129	204	0.042		−0.007	−0.002		0.045		0.009	0.002	−4.69	6.05			−4.69	5.24
130	205	0.042		−0.007	−0.003		0.045		0.009	0.003	−3.56	10.56			−3.56	9.75
131	206	0.058		−0.013	−0.010		0.062		0.017	0.011	−2.58	16.57			−2.54	15.79
132	207	0.067		−0.020	−0.011		0.072		0.026	0.013	−1.60	21.18			−1.54	20.43
133	208	0.092		−0.033	−0.010		0.099		0.044	0.014	−0.89	27.16			−0.79	26.46
134	209	0.100		−0.033	−0.009		0.107		0.044	0.014	−0.22	31.72			−0.11	31.03

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 75 (Re)																
135	210	0.117	0.046	−0.033	0.005	−0.008	0.126	−0.064	0.047	0.002	0.17	37.61			0.31	36.97
136	211	0.125		−0.033	−0.005		0.134		0.047	0.011	0.82	42.40			0.95	41.75
137	212	0.142		−0.047	−0.012		0.153		0.066	0.022	0.93	48.26			1.20	47.76
138	213	0.150		−0.033	−0.007		0.161		0.050	0.014	1.26	52.95			1.43	52.38
139	214	0.150		−0.040	−0.006		0.162		0.059	0.015	1.17	58.83			1.37	58.31
140	215	0.158		−0.040	0.000		0.170		0.060	0.009	1.30	63.56			1.50	63.06
141	216	0.175		−0.040	0.005		0.188		0.063	0.005	1.06	69.51			1.28	69.05
142	217	0.183		−0.040	0.009		0.197		0.064	0.002	1.16	74.44			1.41	74.02
143	218	0.192		−0.033	0.013		0.207		0.057	−0.003	0.86	80.56			1.09	80.14
144	219	0.192		−0.020	0.012		0.207		0.041	−0.006	0.85	85.59			1.03	85.16
145	220	0.200		−0.013	0.014		0.216		0.034	−0.009	0.47	91.84			0.65	91.43
146	221	0.200		−0.007	0.015		0.216		0.027	−0.012	0.41	97.05			0.61	96.68
147	222	0.200		0.000	0.016		0.217		0.018	−0.014	0.00	103.46			0.19	103.12
148	223	0.200		0.013	0.014		0.217		0.003	−0.016	−0.08	108.86			0.12	108.56
149	224	0.208		0.013	0.018		0.226		0.004	−0.020	−0.60	115.37			−0.35	115.15
150	225	0.200		0.027	0.016		0.218		−0.014	−0.021	−0.64	121.01			−0.38	120.85
151	226	0.208		0.033	0.018		0.228		−0.019	−0.024	−1.17	127.72			−0.84	127.65
152	227	0.208		0.040	0.020		0.228		−0.028	−0.028	−1.22	133.55			−0.81	133.60
153	228	0.200		0.040	0.016		0.219		−0.030	−0.024	−1.44	140.75			−1.09	140.78
154	229	0.200		0.047	0.010		0.219		−0.038	−0.020	−1.45	146.82			−1.09	146.91
155	230	0.200		0.053	0.007		0.220		−0.046	−0.018	−1.83	154.05			−1.45	154.21
156	231	0.200		0.060	0.002		0.220		−0.055	−0.015	−1.89	160.26			−1.46	160.51
157	232	0.192		0.060	−0.001		0.211		−0.056	−0.011	−2.35	167.61			−1.94	167.88
158	233	0.192		0.067	−0.004		0.212		−0.065	−0.010	−2.56	173.85			−2.08	174.24
159	234	0.192		0.073	−0.008		0.212		−0.073	−0.007	−3.25	181.15			−2.69	181.65
160	235	0.192		0.080	−0.012		0.212		−0.081	−0.005	−3.62	187.42			−2.95	188.09
161	236	0.192		0.080	−0.015		0.212		−0.082	−0.002	−4.25	194.94			−3.57	195.67
162	237	0.200		0.093	−0.021		0.222		−0.097	0.001	−4.59	201.42			−3.68	202.44
163	238	0.192		0.093	−0.025		0.213		−0.098	0.005	−4.95	209.40			−4.00	210.50
164	239	0.183		0.093	−0.028		0.202		−0.100	0.009	−4.71	216.63			−3.71	217.85
165	240	0.175		0.093	−0.032		0.193		−0.101	0.014	−4.94	224.90			−3.88	226.23
166	241	0.158		0.080	−0.027		0.173		−0.088	0.013	−4.21	232.80			−3.37	233.97
167	242	0.150		0.080	−0.026		0.164		−0.088	0.013	−4.18	241.49			−3.34	242.72
168	243	0.150		0.080	−0.030		0.164		−0.089	0.017	−4.21	248.80			−3.31	250.15
169	244	0.150		0.080	−0.036		0.164		−0.089	0.022	−4.74	257.09			−3.73	258.62
170	245	0.133		0.067	−0.028		0.145		−0.075	0.018	−4.19	265.14			−3.47	266.44
171	246	−0.150		0.000	−0.020		−0.156		0.010	0.018	−3.29	275.02			−3.03	275.93
172	247	−0.150		−0.007	−0.024		−0.155		0.018	0.021	−3.60	282.39			−3.27	283.42
173	248	0.100		0.047	−0.027		0.108		−0.053	0.022	−3.78	291.34			−3.27	292.62
174	249	0.100		0.053	−0.032		0.108		−0.061	0.026	−4.22	298.72			−3.53	300.25
175	250	0.100		0.060	−0.036		0.108		−0.069	0.029	−5.01	307.22			−4.17	308.98
Z = 76 (Os)																
83	159	−0.042		0.000	−0.001		−0.044		0.001	0.001	−6.09	−4.33			−6.10	−2.49
84	160	0.008		0.000	0.000		0.008		0.000	0.000	−5.30	−9.07			−5.30	−7.34
85	161	0.058		0.007	−0.002		0.062		−0.007	0.002	−3.85	−10.71			−3.86	−9.10
86	162	0.042		0.007	0.000		0.045		−0.008	0.000	−2.81	−14.69			−2.81	−13.19
87	163	0.083		0.000	−0.004		0.089		0.003	0.004	−1.91	−16.41			−1.92	−15.02
88	164	0.100		0.007	−0.005		0.107		−0.004	0.004	−1.21	−20.24			−1.22	−18.96
89	165	0.117		0.000	−0.003		0.125		0.006	0.003	−0.67	−21.84			−0.69	−20.67
90	166	0.125		0.007	−0.001		0.134		−0.002	0.000	−0.19	−25.44			−0.21	−24.35
91	167	0.142		0.007	0.002		0.153		0.000	−0.003	0.16	−26.77			0.14	−25.79
92	168	0.150		0.013	0.000		0.162		−0.006	−0.002	0.52	−30.02	−30.12	0.040	0.50	−29.13
93	169	0.150		0.013	−0.001		0.162		−0.006	−0.001	0.83	−30.97			0.81	−30.17
94	170	0.158		0.020	0.000		0.171		−0.014	−0.003	0.98	−33.98	−33.93	0.015	0.96	−33.27
95	171	0.175		0.020	0.000		0.190		−0.011	−0.003	1.03	−34.77			1.01	−34.14
96	172	0.175		0.020	−0.001		0.190		−0.011	−0.002	1.09	−37.45			1.07	−36.90
97	173	0.208		0.013	0.001		0.226		0.003	−0.003	1.04	−37.92			1.02	−37.46

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 76$ (Os)																
98	174	0.208		0.020	0.001		0.226		−0.006	−0.005	0.93	−40.34			0.92	−39.95
99	175	0.233		0.013	0.006		0.254		0.008	−0.007	0.95	−40.35			0.93	−40.04
100	176	0.225		0.027	0.001		0.246		−0.011	−0.006	0.76	−42.45			0.76	−42.19
101	177	0.233		0.033	0.003		0.255		−0.016	−0.010	0.56	−42.30			0.55	−42.12
102	178	0.225		0.040	−0.002		0.247		−0.027	−0.007	0.33	−44.04			0.34	−43.91
103	179	0.233		0.047	−0.001		0.256		−0.034	−0.010	0.08	−43.56			0.09	−43.50
104	180	0.217		0.053	−0.008		0.238		−0.045	−0.004	−0.28	−45.06			−0.26	−45.04
105	181	0.225		0.060	−0.009		0.248		−0.052	−0.005	−0.57	−44.26			−0.54	−44.29
106	182	0.217		0.067	−0.015		0.239		−0.062	−0.001	−0.94	−45.39	−44.54	0.025	−0.88	−45.45
107	183	0.217		0.073	−0.015		0.240		−0.069	−0.002	−1.32	−44.33			−1.25	−44.43
108	184	0.208		0.073	−0.018		0.229		−0.071	0.001	−1.61	−45.02	−44.26	0.003	−1.51	−45.15
109	185	0.208		0.080	−0.023		0.230		−0.080	0.005	−1.82	−43.45	−42.81	0.003	−1.71	−43.62
110	186	0.200		0.080	−0.029		0.220		−0.082	0.011	−1.88	−43.56	−43.00	0.003	−1.73	−43.74
111	187	0.192		0.087	−0.034		0.212		−0.092	0.015	−2.16	−41.72	−41.22	0.003	−1.98	−41.91
112	188	0.175		0.080	−0.033		0.192		−0.086	0.017	−2.08	−41.35	−41.14	0.003	−1.90	−41.59
113	189	0.167		0.080	−0.035		0.183		−0.087	0.020	−2.43	−39.26	−38.99	0.003	−2.24	−39.53
114	190	0.150		0.073	−0.030		0.164		−0.080	0.018	−2.47	−38.69	−38.71	0.003	−2.30	−39.01
115	191	0.150		0.073	−0.032		0.164		−0.081	0.020	−3.07	−36.53	−36.40	0.003	−2.89	−36.88
116	192	0.142		0.073	−0.032		0.155		−0.081	0.020	−3.50	−36.02	−35.89	0.004	−3.29	−36.38
117	193	0.142		0.073	−0.037		0.155		−0.082	0.025	−4.17	−33.62	−33.40	0.004	−3.94	−33.99
118	194	0.133		0.073	−0.035		0.145		−0.082	0.024	−4.42	−32.62	−32.44	0.004	−4.18	−33.01
119	195	0.117		0.060	−0.027		0.127		−0.068	0.019	−4.77	−29.61	−29.70	0.500	−4.61	−30.11
120	196	−0.150		0.033	−0.012		−0.156		−0.028	0.016	−4.68	−27.97	−28.30	0.040	−4.60	−28.57
121	197	−0.125		0.027	−0.007		−0.131		−0.024	0.010	−5.45	−25.09			−5.40	−25.75
122	198	−0.092		0.027	0.004		−0.096		−0.028	−0.001	−6.11	−23.90			−6.08	−24.59
123	199	−0.075		0.033	0.008		−0.078		−0.036	−0.005	−7.00	−20.85			−6.95	−21.55
124	200	−0.058		0.033	0.011		−0.061		−0.037	−0.008	−7.58	−19.29			−7.52	−20.00
125	201	−0.017		0.007	0.002		−0.018		−0.008	−0.002	−8.63	−16.14			−8.63	−16.92
126	202	0.008		0.000	0.000		0.008		0.000	0.000	−8.82	−13.90			−8.82	−14.70
127	203	−0.017		−0.007	0.001		−0.018		0.008	−0.001	−8.02	−8.64			−8.02	−9.44
128	204	0.008		0.000	0.000		0.008		0.000	0.000	−6.97	−4.89			−6.97	−5.70
129	205	0.025		−0.007	0.001		0.026		0.009	−0.001	−5.71	1.11			−5.71	0.29
130	206	0.025		−0.007	−0.001		0.026		0.009	0.001	−4.53	5.25			−4.53	4.43
131	207	0.042		−0.013	−0.010		0.045		0.016	0.011	−3.38	11.39			−3.35	10.59
132	208	0.050		−0.013	−0.004		0.053		0.017	0.005	−2.33	15.66			−2.31	14.85
133	209	0.083	0.050	−0.027	0.003	−0.012	0.089	−0.069	0.036	0.002	−1.41	21.82			−1.30	21.10
134	210	0.092		−0.027	−0.011		0.099		0.036	0.015	−0.66	26.04			−0.57	25.32
135	211	0.100	0.052	−0.033	0.004	−0.008	0.108	−0.072	0.045	0.003	−0.24	31.94			−0.09	31.27
136	212	0.108	0.041	−0.033	0.005	−0.006	0.116	−0.057	0.046	0.001	0.35	36.26			0.50	35.59
137	213	0.133		−0.040	−0.012		0.143		0.056	0.020	0.71	42.33			0.91	41.73
138	214	0.142		−0.033	−0.009		0.153		0.049	0.016	1.09	46.68			1.26	46.06
139	215	0.150		−0.047	−0.007		0.162		0.067	0.018	1.07	52.60			1.33	52.08
140	216	0.158		−0.040	−0.002		0.170		0.060	0.011	1.27	57.00			1.48	56.44
141	217	0.175		−0.047	0.004		0.189		0.071	0.008	1.14	63.03			1.41	62.55
142	218	0.183		−0.040	0.006		0.197		0.064	0.005	1.25	67.58			1.50	67.10
143	219	0.183		−0.040	0.011		0.197		0.064	0.000	1.02	73.74			1.27	73.27
144	220	0.192		−0.027	0.011		0.207		0.050	−0.003	0.99	78.36			1.20	77.88
145	221	0.192		−0.020	0.013		0.207		0.041	−0.007	0.65	84.62			0.84	84.14
146	222	0.192		−0.013	0.014		0.207		0.033	−0.010	0.64	89.48			0.83	89.03
147	223	0.200		−0.013	0.020		0.216		0.035	−0.015	0.19	95.84			0.43	95.46
148	224	0.200		0.000	0.017		0.217		0.019	−0.015	0.10	100.85			0.32	100.47
149	225	0.208		0.007	0.018		0.226		0.012	−0.018	−0.35	107.40			−0.11	107.08
150	226	0.200		0.013	0.018		0.217		0.003	−0.020	−0.42	112.64			−0.17	112.35
151	227	0.208		0.020	0.020		0.227		−0.004	−0.023	−0.87	119.39			−0.58	119.18
152	228	0.208		0.033	0.021		0.228		−0.019	−0.027	−0.91	124.86			−0.52	124.78
153	229	0.200		0.033	0.017		0.219		−0.021	−0.023	−1.13	132.04			−0.81	131.93
154	230	0.200		0.040	0.012		0.219		−0.030	−0.020	−1.12	137.76			−0.80	137.68

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 76 (Os)																
155	231	0.200		0.047	0.008		0.219		−0.039	−0.018	−1.47	145.00			−1.13	144.98
156	232	0.192		0.053	0.004		0.211		−0.048	−0.015	−1.48	150.89			−1.12	150.94
157	233	0.183		0.053	0.000		0.201		−0.049	−0.010	−1.85	158.30			−1.51	158.37
158	234	0.183		0.060	−0.004		0.201		−0.058	−0.008	−2.05	164.19			−1.65	164.36
159	235	0.183		0.067	−0.007		0.201		−0.067	−0.006	−2.71	171.49			−2.24	171.77
160	236	0.183		0.073	−0.010		0.202		−0.074	−0.004	−3.06	177.43			−2.50	177.84
161	237	0.183		0.080	−0.013		0.202		−0.083	−0.003	−3.72	184.90			−3.06	185.46
162	238	0.192		0.087	−0.019		0.212		−0.091	0.001	−4.09	190.99			−3.29	191.74
163	239	0.183		0.087	−0.022		0.202		−0.092	0.004	−4.38	199.02			−3.56	199.84
164	240	0.167		0.087	−0.023		0.184		−0.094	0.007	−4.05	205.99			−3.20	206.89
165	241	0.158		0.080	−0.025		0.173		−0.087	0.011	−4.06	214.46			−3.28	215.34
166	242	0.150		0.073	−0.022		0.164		−0.080	0.010	−3.41	221.93			−2.74	222.75
167	243	0.150		0.073	−0.024		0.164		−0.080	0.012	−3.79	230.19			−3.09	231.10
168	244	0.142		0.067	−0.025		0.155		−0.074	0.014	−3.60	237.37			−2.95	238.28
169	245	0.117		0.047	−0.008		0.127		−0.051	0.002	−2.62	247.15			−2.33	247.77
170	246	0.100		0.027	−0.008		0.108		−0.029	0.005	−1.99	254.94			−1.86	255.47
171	247	−0.142		−0.007	−0.019		−0.147		0.017	0.016	−3.54	262.36			−3.31	263.04
172	248	−0.142		−0.007	−0.023		−0.147		0.017	0.020	−3.89	269.33			−3.60	270.14
173	249	0.092		0.040	−0.019		0.099		−0.045	0.015	−3.69	278.66			−3.38	279.55
174	250	0.092		0.047	−0.022		0.099		−0.054	0.017	−4.12	285.71			−3.69	286.77
175	251	0.092		0.053	−0.028		0.099		−0.061	0.022	−4.97	294.13			−4.38	295.43
176	252	0.092		0.060	−0.031		0.099		−0.070	0.025	−5.19	301.56			−4.44	303.07
177	253	−0.100		0.027	−0.001		−0.105		−0.027	0.004	−6.32	309.85			−6.18	310.83
Z = 77 (Ir)																
85	162	−0.033		0.007	−0.006		−0.035		−0.008	0.006	−5.21	−2.20			−5.21	−0.34
86	163	−0.033		0.000	−0.001		−0.035		0.000	0.001	−4.03	−6.12			−4.04	−4.38
87	164	0.083		0.007	−0.002		0.089		−0.006	0.001	−2.95	−8.16			−2.96	−6.54
88	165	0.092		0.013	−0.005		0.099		−0.012	0.004	−2.05	−11.88			−2.07	−10.36
89	166	0.100		0.007	−0.005		0.107		−0.004	0.004	−1.35	−13.83			−1.37	−12.42
90	167	0.108		0.013	−0.003		0.116		−0.011	0.002	−0.76	−17.37			−0.77	−16.07
91	168	0.125		0.013	−0.001		0.134		−0.009	−0.001	−0.34	−19.15			−0.36	−17.95
92	169	0.125		0.013	−0.001		0.134		−0.009	−0.001	0.14	−22.34			0.12	−21.24
93	170	0.142		0.013	−0.002		0.153		−0.007	0.000	0.47	−23.76	−23.37	0.140	0.45	−22.77
94	171	0.142		0.020	−0.001		0.153		−0.016	−0.002	0.77	−26.70	−26.36	0.100	0.75	−25.79
95	172	0.150		0.020	−0.001		0.162		−0.015	−0.002	0.99	−27.81			0.96	−27.00
96	173	0.150		0.027	−0.003		0.162		−0.023	−0.001	1.19	−30.40			1.17	−29.67
97	174	0.158		0.027	−0.003		0.171		−0.022	−0.001	1.22	−31.29			1.19	−30.65
98	175	0.158		0.027	−0.004		0.171		−0.022	0.000	1.22	−33.66			1.21	−33.09
99	176	0.233		0.013	0.003		0.254		0.008	−0.004	0.89	−34.51			0.85	−34.05
100	177	0.167		0.033	−0.005		0.181		−0.028	−0.001	1.03	−36.33			1.02	−35.92
101	178	0.242		0.027	0.002		0.265		−0.007	−0.007	0.68	−36.81			0.64	−36.49
102	179	0.225		0.033	−0.006		0.246		−0.019	−0.001	0.36	−38.70			0.35	−38.44
103	180	0.233		0.040	−0.004		0.256		−0.026	−0.005	0.18	−38.63			0.16	−38.45
104	181	0.217		0.047	−0.013		0.238		−0.038	0.002	−0.17	−40.17			−0.17	−40.03
105	182	0.233		0.053	−0.012		0.256		−0.042	−0.001	−0.29	−39.67			−0.29	−39.60
106	183	0.217		0.060	−0.019		0.238		−0.054	0.005	−0.72	−40.92			−0.69	−40.88
107	184	0.217		0.067	−0.019		0.239		−0.063	0.003	−1.04	−40.26	−39.97	0.060	−1.00	−40.27
108	185	0.192		0.067	−0.016		0.211		−0.066	0.002	−1.42	−41.10			−1.37	−41.15
109	186	0.192		0.073	−0.020		0.211		−0.074	0.005	−1.63	−39.97	−39.17	0.020	−1.56	−40.07
110	187	0.167		0.067	−0.019		0.183		−0.070	0.007	−1.47	−39.92			−1.39	−40.06
111	188	0.158		0.067	−0.019		0.173		−0.071	0.007	−1.63	−38.41	−38.33	0.007	−1.55	−38.61
112	189	0.150		0.060	−0.019		0.164		−0.064	0.009	−1.73	−38.28	−38.46	0.013	−1.65	−38.52
113	190	0.150		0.067	−0.023		0.164		−0.073	0.012	−2.26	−36.82	−36.71	0.200	−2.16	−37.09
114	191	0.142		0.060	−0.022		0.155		−0.065	0.012	−2.54	−36.53	−36.72	0.003	−2.44	−36.84
115	192	0.133		0.060	−0.024		0.145		−0.066	0.015	−3.12	−34.80	−34.84	0.003	−3.02	−35.15
116	193	0.125		0.060	−0.023		0.136		−0.067	0.015	−3.62	−34.41	−34.54	0.003	−3.51	−34.79
117	194	0.125		0.060	−0.024		0.136		−0.067	0.016	−4.22	−32.39	−32.54	0.003	−4.10	−32.80

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 77$ (Ir)																
118	195	0.117		0.060	−0.028		0.127		−0.068	0.020	−4.72	−31.68	−31.70	0.003	−4.57	−32.10
119	196	0.100		0.053	−0.022		0.108		−0.060	0.016	−5.18	−29.22	−29.46	0.040	−5.07	−29.71
120	197	−0.150		0.033	−0.011		−0.156		−0.028	0.016	−5.39	−27.92	−28.29	0.021	−5.32	−28.48
121	198	−0.117		0.027	−0.006		−0.122		−0.025	0.009	−6.46	−25.77			−6.42	−26.39
122	199	−0.083		0.027	0.005		−0.087		−0.028	−0.002	−7.01	−24.52			−6.98	−25.17
123	200	−0.075		0.027	0.006		−0.079		−0.029	−0.003	−7.89	−21.89			−7.86	−22.56
124	201	−0.058		0.027	0.009		−0.061		−0.030	−0.007	−8.48	−20.39			−8.45	−21.08
125	202	−0.017		0.007	0.002		−0.018		−0.008	−0.002	−9.50	−17.62			−9.50	−18.37
126	203	0.008		0.000	0.000		0.008		0.000	0.000	−9.69	−15.43			−9.69	−16.19
127	204	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−8.75	−10.43			−8.74	−11.21
128	205	−0.008		0.000	0.001		−0.008		0.000	−0.001	−7.86	−6.88			−7.86	−7.68
129	206	0.025		−0.007	0.001		0.026		0.009	−0.001	−6.54	−1.25			−6.54	−2.06
130	207	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−5.42	2.80			−5.42	1.98
131	208	0.042		−0.013	−0.010		0.045		0.016	0.011	−4.16	8.64			−4.13	7.84
132	209	0.050		−0.013	−0.004		0.053		0.017	0.005	−3.09	12.89			−3.08	12.08
133	210	0.075		−0.020	−0.013		0.080		0.026	0.015	−2.10	18.71			−2.04	17.93
134	211	0.083		−0.020	−0.011		0.089		0.027	0.013	−1.32	22.93			−1.26	22.16
135	212	0.100	0.041	−0.020	0.002	−0.007	0.107	−0.056	0.029	0.002	−0.82	28.50			−0.74	27.75
136	213	0.100	0.033	−0.020	0.002	−0.006	0.107	−0.045	0.029	0.002	−0.21	32.80			−0.14	32.04
137	214	0.125	0.034	−0.027	0.005	−0.007	0.134	−0.047	0.040	0.001	0.28	38.61			0.39	37.88
138	215	0.133		−0.027	−0.007		0.143		0.040	0.012	0.67	42.93			0.79	42.22
139	216	0.150		−0.033	−0.009		0.162		0.050	0.016	0.80	48.61			0.97	47.96
140	217	0.150		−0.033	−0.004		0.161		0.050	0.011	1.00	52.97			1.15	52.32
141	218	0.158		−0.040	0.001		0.170		0.060	0.008	0.87	58.62			1.06	58.01
142	219	0.175		−0.040	0.003		0.188		0.063	0.007	1.01	63.16			1.23	62.60
143	220	0.175		−0.033	0.003		0.188		0.054	0.006	0.81	68.96			0.99	68.37
144	221	0.175		−0.027	0.007		0.188		0.047	0.000	0.90	73.68			1.07	73.09
145	222	0.183		−0.020	0.008		0.197		0.039	−0.002	0.58	79.57			0.73	78.98
146	223	0.183		−0.013	0.009		0.197		0.031	−0.005	0.60	84.44			0.75	83.87
147	224	0.192		−0.013	0.012		0.207		0.033	−0.008	0.15	90.41			0.31	89.88
148	225	0.192		0.000	0.012		0.208		0.017	−0.011	0.10	95.43			0.25	94.91
149	226	0.200		0.000	0.016		0.217		0.018	−0.014	−0.39	101.56			−0.20	101.11
150	227	0.200		0.007	0.015		0.217		0.010	−0.015	−0.45	106.79			−0.25	106.36
151	228	0.208		0.020	0.016		0.227		−0.004	−0.019	−0.88	113.18			−0.65	112.82
152	229	0.208		0.027	0.018		0.227		−0.012	−0.023	−0.88	118.67			−0.59	118.40
153	230	0.200		0.027	0.013		0.218		−0.014	−0.018	−1.07	125.51			−0.83	125.21
154	231	0.192		0.033	0.008		0.209		−0.023	−0.014	−0.95	131.31			−0.72	131.04
155	232	0.183		0.033	0.009		0.199		−0.025	−0.015	−1.14	138.35			−0.92	138.10
156	233	0.175		0.040	0.005		0.191		−0.035	−0.012	−1.16	144.20			−0.92	144.01
157	234	0.167		0.040	0.001		0.182		−0.036	−0.008	−1.42	151.35			−1.21	151.17
158	235	0.167		0.047	−0.001		0.182		−0.045	−0.007	−1.63	157.22			−1.36	157.13
159	236	0.167		0.053	−0.004		0.183		−0.052	−0.006	−2.23	164.22			−1.92	164.21
160	237	0.167		0.060	−0.006		0.183		−0.061	−0.005	−2.58	170.13			−2.19	170.24
161	238	0.175		0.073	−0.010		0.193		−0.075	−0.004	−3.35	177.14			−2.82	177.43
162	239	0.175		0.080	−0.011		0.193		−0.084	−0.004	−3.65	183.28			−3.02	183.72
163	240	0.167		0.080	−0.015		0.184		−0.085	0.000	−3.91	190.97			−3.27	191.47
164	241	0.158		0.080	−0.019		0.174		−0.087	0.005	−3.63	197.88			−2.95	198.46
165	242	0.150		0.073	−0.017		0.164		−0.079	0.005	−3.42	206.21			−2.84	206.74
166	243	0.150		0.067	−0.019		0.164		−0.072	0.008	−3.28	213.16			−2.74	213.69
167	244	0.142		0.067	−0.018		0.155		−0.073	0.008	−3.61	221.12			−3.08	221.71
168	245	0.108		0.040	0.000		0.117		−0.043	−0.005	−2.31	229.40			−2.10	229.71
169	246	0.100		0.033	−0.004		0.108		−0.035	0.000	−2.58	237.59			−2.43	237.90
170	247	0.092		0.020	0.001		0.099		−0.020	−0.003	−2.28	245.03			−2.20	245.32
171	248	−0.133		−0.007	−0.015		−0.138		0.016	0.013	−4.11	251.82			−3.94	252.26
172	249	−0.133		−0.007	−0.018		−0.138		0.016	0.016	−4.44	258.80			−4.23	259.33
173	250	0.092		0.040	−0.016		0.099		−0.045	0.012	−4.27	267.75			−4.00	268.40
174	251	0.083		0.040	−0.015		0.089		−0.045	0.011	−4.43	275.06			−4.17	275.77

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 77 (Ir)																
175	252	0.083		0.047	−0.021		0.089		−0.054	0.017	−5.28	283.15			−4.89	284.05
176	253	0.083		0.053	−0.027		0.089		−0.061	0.022	−5.68	290.38			−5.11	291.51
177	254	−0.092		0.027	−0.001		−0.096		−0.028	0.004	−6.87	298.28			−6.74	299.04
178	255	−0.083		0.020	−0.008		−0.087		−0.020	0.010	−6.97	305.96			−6.86	306.77
179	256	−0.050		0.013	−0.005		−0.053		−0.014	0.006	−6.94	315.23			−6.89	316.04
Z = 78 (Pt)																
87	165	−0.058		0.007	0.004		−0.061		−0.007	−0.003	−3.53	−0.81			−3.54	1.08
88	166	−0.067		0.007	0.002		−0.070		−0.006	−0.001	−2.61	−5.00			−2.62	−3.24
89	167	−0.083		0.013	0.002		−0.087		−0.012	−0.001	−1.65	−6.77			−1.67	−5.12
90	168	−0.092		0.007	0.002		−0.096		−0.005	−0.001	−0.88	−10.63			−0.89	−9.09
91	169	0.100		0.000	0.001		0.107		0.004	−0.001	−0.50	−12.53			−0.52	−11.10
92	170	0.100		0.007	0.000		0.107		−0.004	−0.001	0.08	−16.11			0.07	−14.79
93	171	0.117		0.007	0.000		0.126		−0.003	−0.001	0.49	−17.53			0.47	−16.31
94	172	0.117		0.013	0.000		0.126		−0.010	−0.002	0.82	−20.93	−21.23	0.040	0.80	−19.80
95	173	0.142		0.007	0.002		0.153		0.000	−0.003	0.96	−22.18			0.93	−21.16
96	174	0.142		0.013	0.001		0.153		−0.007	−0.003	1.17	−25.25	−25.32	0.016	1.16	−24.32
97	175	0.167		0.007	0.003		0.180		0.004	−0.004	1.15	−26.25			1.12	−25.42
98	176	0.158		0.013	0.001		0.171		−0.005	−0.003	1.26	−29.00			1.25	−28.25
99	177	0.242		0.007	0.007		0.264		0.018	−0.006	1.26	−29.58			1.22	−28.93
100	178	0.233		0.013	0.003		0.254		0.008	−0.004	1.10	−32.18			1.08	−31.60
101	179	0.250		0.020	0.006		0.274		0.003	−0.009	1.06	−32.41			1.03	−31.92
102	180	0.242		0.027	0.001		0.265		−0.007	−0.007	0.94	−34.58			0.92	−34.15
103	181	0.242		0.033	0.002		0.265		−0.015	−0.009	0.68	−34.64			0.66	−34.29
104	182	0.233		0.040	−0.007		0.255		−0.026	−0.002	0.51	−36.47			0.51	−36.18
105	183	0.233		0.047	−0.008		0.256		−0.034	−0.003	0.22	−36.20			0.21	−35.98
106	184	0.225		0.053	−0.013		0.247		−0.044	0.000	−0.08	−37.78			−0.05	−37.60
107	185	0.225		0.060	−0.014		0.248		−0.052	0.000	−0.37	−37.15			−0.34	−37.03
108	186	0.217		0.067	−0.017		0.239		−0.062	0.001	−0.52	−38.22	−37.79	0.030	−0.47	−38.14
109	187	0.208		0.073	−0.021		0.229		−0.072	0.004	−0.82	−37.25			−0.76	−37.22
110	188	−0.158		0.020	−0.004		−0.164		−0.013	0.007	−0.16	−37.14	−37.83	0.006	−0.15	−37.23
111	189	−0.158		0.027	−0.002		−0.164		−0.021	0.006	−0.51	−35.88	−36.49	0.011	−0.50	−36.02
112	190	−0.150		0.027	−0.002		−0.156		−0.022	0.006	−0.97	−36.56	−37.33	0.006	−0.95	−36.74
113	191	−0.150		0.033	−0.001		−0.156		−0.029	0.006	−1.44	−35.09	−35.70	0.005	−1.42	−35.32
114	192	−0.150		0.033	−0.001		−0.156		−0.029	0.006	−2.01	−35.54	−36.30	0.004	−1.98	−35.82
115	193	−0.150		0.040	0.001		−0.156		−0.037	0.006	−2.62	−33.88	−34.49	0.003	−2.58	−34.20
116	194	−0.142		0.033	−0.002		−0.148		−0.029	0.007	−3.31	−34.13	−34.79	0.003	−3.28	−34.50
117	195	−0.142		0.040	−0.001		−0.148		−0.037	0.007	−4.04	−32.29	−32.82	0.003	−4.00	−32.68
118	196	−0.133		0.033	−0.009		−0.139		−0.030	0.013	−4.80	−32.27	−32.67	0.003	−4.75	−32.70
119	197	−0.142		0.033	−0.007		−0.148		−0.029	0.012	−5.41	−30.01	−30.44	0.003	−5.36	−30.48
120	198	−0.133		0.033	−0.013		−0.139		−0.030	0.017	−6.11	−29.64	−29.93	0.005	−6.05	−30.13
121	199	−0.108		0.027	−0.003		−0.113		−0.026	0.006	−7.14	−27.49	−27.42	0.005	−7.11	−28.05
122	200	−0.083		0.027	0.005		−0.087		−0.028	−0.002	−7.76	−26.73	−26.63	0.021	−7.73	−27.32
123	201	−0.075		0.033	0.008		−0.078		−0.036	−0.005	−8.64	−24.16	−23.75	0.050	−8.60	−24.76
124	202	−0.058		0.033	0.010		−0.061		−0.037	−0.007	−9.22	−23.06			−9.17	−23.69
125	203	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−10.25	−20.35			−10.25	−21.05
126	204	0.008		0.000	0.000		0.008		0.000	0.000	−10.40	−18.54			−10.40	−19.27
127	205	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−9.58	−13.71			−9.58	−14.45
128	206	0.008		0.000	0.000		0.008		0.000	0.000	−8.54	−10.43			−8.54	−11.19
129	207	0.025		−0.007	0.001		0.026		0.009	−0.001	−7.19	−4.80			−7.19	−5.58
130	208	0.025		0.000	0.000		0.027		0.000	0.000	−6.02	−1.12			−6.02	−1.91
131	209	0.033		−0.007	0.001		0.035		0.009	−0.001	−4.91	4.53			−4.91	3.72
132	210	0.042		−0.007	−0.003		0.045		0.009	0.003	−3.78	8.44			−3.78	7.62
133	211	0.058	0.049	−0.013	0.001	−0.005	0.063	−0.067	0.018	0.002	−2.78	14.23			−2.72	13.46
134	212	0.075		−0.020	−0.009		0.080		0.026	0.011	−1.84	18.21			−1.79	17.42
135	213	0.092	0.052	−0.027	0.003	−0.006	0.099	−0.072	0.037	0.002	−1.24	23.85			−1.13	23.12
136	214	0.100	0.043	−0.027	0.003	−0.006	0.108	−0.059	0.038	0.002	−0.52	27.85			−0.41	27.12
137	215	0.108	0.041	−0.033	0.005	−0.005	0.116	−0.057	0.046	0.001	−0.11	33.54			0.01	32.82

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 78$ (Pt)																
138	216	0.117		−0.033	−0.005		0.125		0.046	0.011	0.35	37.53			0.46	36.80
139	217	0.142		−0.047	−0.008		0.153		0.066	0.018	0.59	43.29			0.82	42.67
140	218	0.150		−0.047	−0.004		0.162		0.067	0.014	0.88	47.35			1.11	46.74
141	219	0.167		−0.047	0.000		0.180		0.070	0.012	0.84	53.06			1.08	52.47
142	220	0.175		−0.047	0.004		0.189		0.071	0.008	1.04	57.27			1.30	56.70
143	221	0.183		−0.040	0.007		0.197		0.064	0.004	0.89	63.08			1.11	62.49
144	222	0.183		−0.033	0.007		0.197		0.055	0.002	0.95	67.39			1.16	66.79
145	223	0.192		−0.033	0.013		0.207		0.057	−0.003	0.65	73.27			0.88	72.71
146	224	0.192		−0.027	0.014		0.207		0.050	−0.006	0.71	77.79			0.92	77.23
147	225	0.200		−0.020	0.018		0.216		0.043	−0.011	0.35	83.82			0.57	83.29
148	226	0.200		−0.013	0.016		0.216		0.034	−0.011	0.32	88.48			0.53	87.95
149	227	0.200		−0.007	0.018		0.216		0.027	−0.015	−0.08	94.68			0.12	94.17
150	228	0.200		0.000	0.016		0.217		0.018	−0.014	−0.11	99.56			0.09	99.06
151	229	0.208		0.013	0.017		0.226		0.004	−0.019	−0.54	105.94			−0.30	105.49
152	230	0.208		0.020	0.020		0.227		−0.004	−0.023	−0.50	111.08			−0.21	110.71
153	231	0.200		0.020	0.015		0.218		−0.006	−0.018	−0.66	117.93			−0.42	117.54
154	232	0.192		0.027	0.012		0.209		−0.016	−0.017	−0.54	123.36			−0.32	122.98
155	233	0.192		0.033	0.008		0.209		−0.023	−0.014	−0.85	130.26			−0.62	129.92
156	234	0.175		0.033	0.005		0.190		−0.026	−0.011	−0.71	135.90			−0.51	135.56
157	235	0.167		0.040	0.001		0.182		−0.036	−0.008	−1.03	142.98			−0.81	142.68
158	236	0.167		0.040	−0.001		0.182		−0.036	−0.006	−1.12	148.59			−0.90	148.34
159	237	0.167		0.047	−0.004		0.182		−0.045	−0.004	−1.70	155.59			−1.44	155.41
160	238	0.167		0.053	−0.004		0.183		−0.052	−0.006	−2.00	161.18			−1.68	161.10
161	239	0.175		0.067	−0.008		0.192		−0.068	−0.005	−2.75	168.20			−2.30	168.29
162	240	0.175		0.073	−0.009		0.193		−0.075	−0.005	−3.02	174.01			−2.48	174.22
163	241	0.167		0.073	−0.014		0.183		−0.077	0.001	−3.28	181.68			−2.74	181.95
164	242	0.158		0.080	−0.018		0.174		−0.087	0.004	−3.08	188.15			−2.42	188.58
165	243	0.150		0.067	−0.014		0.164		−0.072	0.003	−2.86	196.49			−2.37	196.78
166	244	0.142		0.060	−0.012		0.155		−0.064	0.003	−2.68	203.11			−2.27	203.38
167	245	0.075		0.013	0.001		0.080		−0.013	−0.002	−0.92	213.16			−0.88	213.09
168	246	0.092		0.027	0.003		0.099		−0.029	−0.006	−1.90	218.80			−1.78	218.85
169	247	0.083		0.020	0.007		0.089		−0.021	−0.009	−2.11	227.03			−2.02	227.11
170	248	0.083		0.007	0.011		0.089		−0.005	−0.012	−2.09	233.85			−2.01	233.97
171	249	0.083		0.013	0.007		0.089		−0.012	−0.008	−2.79	241.76			−2.72	241.92
172	250	0.083		0.027	−0.002		0.089		−0.029	0.000	−3.37	248.14			−3.26	248.40
173	251	0.083		0.033	−0.006		0.089		−0.037	0.003	−4.10	256.18			−3.95	256.54
174	252	0.075		0.040	−0.012		0.081		−0.046	0.009	−4.52	262.89			−4.28	263.38
175	253	0.075		0.040	−0.018		0.081		−0.046	0.015	−5.27	271.06			−4.98	271.67
176	254	0.075		0.047	−0.024		0.081		−0.055	0.020	−5.69	277.93			−5.25	278.75
177	255	−0.092		0.033	0.001		−0.096		−0.035	0.003	−7.35	285.36			−7.19	285.95
178	256	−0.083		0.027	−0.005		−0.087		−0.028	0.007	−7.47	292.68			−7.34	293.31
179	257	−0.050		0.020	−0.003		−0.053		−0.022	0.004	−7.45	301.92			−7.39	302.55
180	258	−0.050		0.027	0.004		−0.052		−0.030	−0.002	−7.77	309.21			−7.66	309.93
181	259	−0.042		0.027	0.009		−0.044		−0.031	−0.007	−8.40	317.96			−8.28	318.76
182	260	−0.025		0.020	0.008		−0.026		−0.023	−0.007	−8.52	325.59			−8.45	326.41
$Z = 79$ (Au)																
88	167	−0.067		0.007	0.001		−0.070		−0.006	0.000	−4.02	3.73			−4.03	5.76
89	168	−0.075		0.013	0.002		−0.079		−0.013	−0.001	−3.02	1.51			−3.03	3.41
90	169	−0.083		0.013	0.003		−0.087		−0.012	−0.002	−2.17	−2.35			−2.18	−0.56
91	170	−0.092		0.013	0.003		−0.096		−0.012	−0.002	−1.34	−4.29			−1.36	−2.62
92	171	−0.100		0.013	0.001		−0.105		−0.011	0.000	−0.70	−7.89			−0.71	−6.32
93	172	−0.100		0.013	0.003		−0.105		−0.011	−0.001	−0.05	−9.55			−0.06	−8.10
94	173	−0.100		0.013	0.000		−0.105		−0.011	0.001	0.43	−12.87			0.41	−11.52
95	174	−0.117		0.013	0.002		−0.122		−0.010	0.000	0.88	−14.30	−14.16	0.140	0.86	−13.05
96	175	−0.117		0.013	0.001		−0.122		−0.010	0.001	1.19	−17.34	−17.16	0.110	1.17	−16.19
97	176	−0.125		0.013	0.001		−0.130		−0.009	0.001	1.47	−18.52			1.45	−17.47
98	177	−0.125		0.013	0.002		−0.130		−0.009	0.000	1.60	−21.32			1.58	−20.36

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 79 (Au)																
99	178	−0.133		0.013	0.002		−0.139		−0.008	0.000	1.69	−22.28			1.67	−21.41
100	179	−0.133		0.013	0.001		−0.139		−0.008	0.001	1.66	−24.82			1.64	−24.04
101	180	−0.142		0.013	0.002		−0.148		−0.007	0.000	1.60	−25.53			1.58	−24.85
102	181	−0.142		0.013	0.000		−0.148		−0.007	0.002	1.43	−27.81			1.42	−27.20
103	182	−0.150		0.013	0.001		−0.156		−0.006	0.001	1.27	−28.24			1.25	−27.72
104	183	−0.150		0.013	0.000		−0.156		−0.006	0.002	0.99	−30.25			0.98	−29.80
105	184	−0.150		0.013	−0.001		−0.156		−0.006	0.003	0.76	−30.37			0.75	−30.00
106	185	−0.150		0.013	−0.001		−0.156		−0.006	0.003	0.47	−32.01			0.46	−31.71
107	186	−0.150		0.013	−0.002		−0.156		−0.006	0.004	0.19	−31.82			0.18	−31.59
108	187	−0.150		0.020	0.000		−0.156		−0.014	0.003	−0.14	−33.13			−0.15	−32.96
109	188	−0.150		0.027	0.001		−0.156		−0.022	0.003	−0.38	−32.55			−0.39	−32.45
110	189	−0.142		0.027	0.000		−0.148		−0.023	0.004	−0.79	−33.57			−0.79	−33.53
111	190	−0.150		0.027	0.000		−0.156		−0.022	0.004	−1.18	−32.80	−32.89	0.016	−1.17	−32.82
112	191	−0.142		0.033	0.001		−0.148		−0.030	0.004	−1.67	−33.56	−33.87	0.050	−1.65	−33.62
113	192	−0.142		0.033	0.001		−0.148		−0.030	0.004	−2.15	−32.55	−32.78	0.016	−2.14	−32.67
114	193	−0.133		0.033	−0.002		−0.139		−0.031	0.007	−2.78	−33.10	−33.42	0.010	−2.76	−33.27
115	194	−0.142		0.040	0.002		−0.148		−0.038	0.004	−3.35	−31.86	−32.29	0.012	−3.33	−32.08
116	195	−0.133		0.033	−0.005		−0.139		−0.030	0.010	−4.08	−32.19	−32.59	0.004	−4.05	−32.45
117	196	−0.133		0.040	0.000		−0.139		−0.039	0.006	−4.79	−30.76	−31.17	0.004	−4.75	−31.07
118	197	−0.125		0.033	−0.003		−0.131		−0.031	0.007	−5.56	−30.81	−31.16	0.003	−5.53	−31.17
119	198	−0.125		0.033	−0.004		−0.131		−0.031	0.008	−6.29	−29.10	−29.60	0.003	−6.26	−29.50
120	199	−0.125		0.033	−0.008		−0.131		−0.031	0.012	−6.94	−28.72	−29.12	0.003	−6.90	−29.15
121	200	−0.100		0.027	−0.001		−0.105		−0.027	0.004	−8.00	−27.04	−27.28	0.050	−7.98	−27.53
122	201	−0.083		0.033	0.007		−0.087		−0.035	−0.003	−8.62	−26.32	−26.41	0.015	−8.59	−26.83
123	202	−0.075		0.033	0.008		−0.078		−0.036	−0.005	−9.48	−24.14	−24.42	0.170	−9.44	−24.69
124	203	−0.058		0.033	0.010		−0.061		−0.037	−0.007	−10.10	−23.14	−23.15	0.015	−10.06	−23.71
125	204	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−11.14	−20.86			−11.14	−21.50
126	205	0.008		0.000	0.000		0.008		0.000	0.000	−11.39	−19.18			−11.39	−19.86
127	206	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−10.41	−14.62			−10.41	−15.31
128	207	−0.017		0.000	0.000		−0.018		0.000	0.000	−9.47	−11.47			−9.47	−12.19
129	208	−0.025		0.007	−0.005		−0.026		−0.008	0.005	−8.25	−6.39			−8.24	−7.13
130	209	−0.033		0.000	0.000		−0.035		0.000	0.000	−6.93	−2.60			−6.93	−3.36
131	210	−0.042		0.000	0.001		−0.044		0.001	−0.001	−5.77	2.69			−5.77	1.91
132	211	−0.050		0.000	0.001		−0.053		0.001	−0.001	−4.65	6.55			−4.65	5.76
133	212	−0.050		0.000	0.002		−0.053		0.001	−0.002	−3.76	11.83			−3.76	11.02
134	213	−0.058		0.000	0.001		−0.061		0.001	−0.001	−2.80	15.79			−2.79	14.97
135	214	0.075	0.052	−0.020	0.002	−0.005	0.081	−0.071	0.027	0.002	−1.99	21.24			−1.91	20.48
136	215	0.083	0.045	−0.020	0.002	−0.005	0.089	−0.062	0.028	0.002	−1.25	25.23			−1.17	24.46
137	216	0.100	0.043	−0.033	0.004	−0.005	0.108	−0.059	0.045	0.002	−0.65	30.71			−0.54	29.97
138	217	0.100	0.039	−0.033	0.004	−0.003	0.107	−0.054	0.045	0.002	−0.15	34.71			−0.03	33.97
139	218	0.125		−0.047	−0.006		0.134		0.064	0.015	0.19	40.17			0.37	39.49
140	219	0.142		−0.047	−0.007		0.153		0.066	0.017	0.51	44.23			0.72	43.59
141	220	0.158		−0.053	0.000		0.170		0.076	0.012	0.53	49.60			0.78	48.99
142	221	0.175		−0.047	0.000		0.189		0.071	0.012	0.81	53.86			1.06	53.26
143	222	0.183		−0.040	0.004		0.197		0.064	0.007	0.71	59.34			0.92	58.71
144	223	0.183		−0.040	0.007		0.197		0.064	0.004	0.78	63.62			1.00	63.00
145	224	0.192		−0.033	0.011		0.207		0.057	−0.001	0.55	69.19			0.75	68.56
146	225	0.192		−0.027	0.011		0.207		0.050	−0.003	0.62	73.69			0.81	73.06
147	226	0.192		−0.027	0.016		0.207		0.050	−0.008	0.31	79.40			0.52	78.80
148	227	0.200		−0.013	0.014		0.216		0.034	−0.009	0.31	84.06			0.50	83.45
149	228	0.200		−0.013	0.018		0.216		0.034	−0.013	−0.06	89.91			0.13	89.33
150	229	0.200		0.000	0.014		0.217		0.018	−0.013	−0.08	94.77			0.10	94.18
151	230	0.200		0.007	0.018		0.217		0.010	−0.018	−0.44	100.84			−0.23	100.30
152	231	0.208		0.013	0.021		0.226		0.005	−0.023	−0.42	105.94			−0.16	105.48
153	232	0.200		0.013	0.015		0.217		0.003	−0.017	−0.52	112.47			−0.32	111.97
154	233	0.200		0.020	0.009		0.218		−0.006	−0.012	−0.40	117.89			−0.22	117.39
155	234	0.192		0.027	0.006		0.209		−0.016	−0.011	−0.67	124.45			−0.49	123.97

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 79 (Au)																
156	235	0.175		0.027	0.003		0.190		−0.019	−0.008	−0.56	130.04			−0.41	129.57
157	236	0.167		0.033	−0.001		0.181		−0.028	−0.005	−0.87	136.76			−0.70	136.32
158	237	0.167		0.040	−0.004		0.182		−0.037	−0.003	−1.01	142.31			−0.80	141.94
159	238	0.158		0.040	−0.003		0.172		−0.038	−0.004	−1.31	149.22			−1.11	148.88
160	239	0.167		0.053	−0.007		0.182		−0.052	−0.003	−1.78	154.63			−1.49	154.42
161	240	0.175		0.060	−0.009		0.192		−0.060	−0.002	−2.40	161.41			−2.03	161.30
162	241	0.183		0.073	−0.011		0.202		−0.074	−0.004	−2.70	167.18			−2.18	167.25
163	242	0.167		0.073	−0.013		0.184		−0.077	0.000	−2.90	174.55			−2.39	174.66
164	243	0.150		0.073	−0.016		0.164		−0.079	0.004	−2.40	181.31			−1.86	181.48
165	244	0.058		0.000	−0.002		0.062		0.001	0.002	−0.21	191.25			−0.19	190.94
166	245	0.058		−0.007	0.000		0.062		0.010	0.001	−0.50	197.39			−0.48	197.12
167	246	0.058		0.000	0.002		0.062		0.001	−0.002	−1.14	204.69			−1.12	204.46
168	247	0.067		0.013	0.004		0.072		−0.014	−0.005	−1.88	210.56			−1.83	210.40
169	248	0.067		0.007	0.008		0.072		−0.006	−0.008	−2.33	218.20			−2.29	218.09
170	249	0.075		0.007	0.012		0.080		−0.006	−0.012	−2.77	224.54			−2.70	224.51
171	250	−0.108		0.000	−0.008		−0.113		0.005	0.007	−4.76	230.82			−4.68	230.83
172	251	−0.108		−0.007	−0.010		−0.112		0.013	0.009	−5.08	237.45			−4.98	237.53
173	252	−0.100		0.000	−0.005		−0.104		0.004	0.005	−5.79	245.17			−5.73	245.26
174	253	0.067		0.033	−0.011		0.072		−0.038	0.008	−5.04	253.03			−4.88	253.28
175	254	0.067		0.033	−0.016		0.072		−0.038	0.013	−5.80	260.85			−5.59	261.20
176	255	−0.092		0.027	0.003		−0.096		−0.028	0.000	−7.16	266.77			−7.05	267.08
177	256	−0.092		0.033	0.001		−0.096		−0.035	0.003	−7.94	274.74			−7.78	275.14
178	257	−0.083		0.033	−0.003		−0.087		−0.035	0.006	−8.15	281.97			−7.98	282.44
179	258	−0.050		0.020	−0.003		−0.053		−0.022	0.004	−8.17	290.84			−8.11	291.27
180	259	−0.050		0.027	0.004		−0.052		−0.030	−0.002	−8.46	298.14			−8.36	298.66
181	260	−0.042		0.027	0.009		−0.044		−0.031	−0.007	−9.09	306.56			−8.97	307.15
182	261	−0.033		0.027	0.012		−0.034		−0.031	−0.010	−9.22	314.17			−9.09	314.85
183	262	0.000		0.007	0.000		0.000		−0.008	0.000	−9.77	322.81			−9.77	323.42
184	263	0.000		0.007	0.000		0.000		−0.008	0.000	−9.57	330.90			−9.57	331.58
Z = 80 (Hg)																
90	170	−0.075		0.013	0.002		−0.079		−0.013	−0.001	−2.78	4.84			−2.79	6.90
91	171	−0.083		0.020	0.005		−0.087		−0.020	−0.003	−1.90	2.89			−1.91	4.82
92	172	−0.092		0.020	0.002		−0.096		−0.020	0.000	−1.22	−1.16			−1.23	0.65
93	173	−0.092		0.020	0.004		−0.096		−0.020	−0.002	−0.55	−2.88			−0.56	−1.18
94	174	−0.100		0.027	0.003		−0.105		−0.027	0.000	−0.02	−6.64			−0.04	−5.05
95	175	−0.100		0.020	0.002		−0.105		−0.019	0.000	0.45	−8.11			0.43	−6.63
96	176	−0.100		0.027	0.003		−0.105		−0.027	0.000	0.78	−11.61	−11.88	0.040	0.77	−10.23
97	177	−0.100		0.020	0.001		−0.105		−0.019	0.001	1.13	−12.79			1.11	−11.52
98	178	−0.108		0.027	0.003		−0.113		−0.026	0.000	1.32	−16.01	−16.32	0.017	1.30	−14.83
99	179	−0.117		0.020	0.004		−0.122		−0.018	−0.001	1.45	−16.99			1.44	−15.91
100	180	−0.117		0.027	0.004		−0.122		−0.026	0.000	1.48	−19.94			1.47	−18.96
101	181	−0.117		0.020	0.004		−0.122		−0.018	−0.001	1.46	−20.68			1.45	−19.79
102	182	−0.117		0.020	0.004		−0.122		−0.018	−0.001	1.32	−23.41			1.31	−22.60
103	183	−0.125		0.020	0.004		−0.130		−0.017	−0.001	1.19	−23.86			1.18	−23.15
104	184	−0.125		0.020	0.003		−0.130		−0.017	0.000	0.91	−26.33			0.90	−25.69
105	185	−0.133		0.020	0.003		−0.139		−0.016	0.000	0.67	−26.52			0.66	−25.97
106	186	−0.125		0.027	0.004		−0.130		−0.025	0.000	0.42	−28.58			0.42	−28.10
107	187	−0.133		0.027	0.004		−0.139		−0.024	0.000	0.12	−28.48			0.11	−28.07
108	188	−0.125		0.027	0.003		−0.130		−0.025	0.001	−0.25	−30.27			−0.24	−29.93
109	189	−0.133		0.033	0.005		−0.139		−0.031	0.000	−0.55	−29.81			−0.55	−29.55
110	190	−0.125		0.033	0.005		−0.130		−0.032	0.000	−1.00	−31.33			−0.99	−31.13
111	191	−0.133		0.033	0.005		−0.139		−0.031	0.000	−1.42	−30.64	−30.69	0.090	−1.41	−30.50
112	192	−0.125		0.033	0.004		−0.130		−0.032	0.001	−1.95	−31.89			−1.94	−31.82
113	193	−0.125		0.040	0.004		−0.130		−0.040	0.002	−2.44	−30.94	−31.08	0.019	−2.43	−30.92
114	194	−0.125		0.040	0.005		−0.130		−0.040	0.001	−3.07	−31.94	−32.25	0.023	−3.04	−31.97
115	195	−0.125		0.040	0.004		−0.130		−0.040	0.002	−3.70	−30.80	−31.07	0.050	−3.67	−30.89
116	196	−0.117		0.033	0.002		−0.122		−0.032	0.003	−4.51	−31.66	−31.85	0.005	−4.49	−31.81

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 80 (Hg)																
117	197	−0.125		0.040	0.002		−0.130		−0.039	0.004	−5.12	−30.17	−30.57	0.005	−5.09	−30.37
118	198	−0.117		0.033	0.000		−0.122		−0.032	0.004	−5.99	−30.75	−30.98	0.003	−5.96	−31.01
119	199	−0.117		0.033	−0.001		−0.122		−0.032	0.005	−6.75	−29.12	−29.57	0.003	−6.72	−29.42
120	200	−0.108		0.033	−0.001		−0.113		−0.033	0.005	−7.52	−29.30	−29.53	0.003	−7.49	−29.64
121	201	−0.100		0.033	0.002		−0.105		−0.034	0.002	−8.37	−27.45	−27.69	0.003	−8.34	−27.83
122	202	−0.083		0.033	0.009		−0.087		−0.035	−0.005	−9.11	−27.28	−27.37	0.003	−9.07	−27.70
123	203	−0.075		0.033	0.009		−0.078		−0.036	−0.005	−10.01	−25.19	−25.29	0.004	−9.97	−25.65
124	204	−0.058		0.033	0.010		−0.061		−0.037	−0.007	−10.69	−24.66	−24.72	0.004	−10.65	−25.16
125	205	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−11.82	−22.52	−22.31	0.006	−11.82	−23.09
126	206	−0.008		0.000	0.000		−0.008		0.000	0.000	−12.00	−21.20	−20.97	0.021	−12.00	−21.81
127	207	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−11.13	−16.78	−16.27	0.150	−11.13	−17.41
128	208	−0.008		0.000	0.000		−0.008		0.000	0.000	−10.13	−13.99			−10.13	−14.66
129	209	−0.017		0.007	−0.007		−0.018		−0.008	0.007	−8.91	−8.95			−8.91	−9.63
130	210	−0.025		0.007	−0.001		−0.026		−0.008	0.001	−7.60	−5.58			−7.60	−6.30
131	211	−0.033		0.007	0.002		−0.035		−0.008	−0.002	−6.44	−0.32			−6.44	−1.06
132	212	−0.042		0.007	0.000		−0.044		−0.007	0.000	−5.31	3.13			−5.31	2.38
133	213	−0.050		0.007	0.001		−0.053		−0.007	−0.001	−4.29	8.51			−4.28	7.73
134	214	−0.050		0.007	0.000		−0.053		−0.007	0.000	−3.37	12.02			−3.37	11.23
135	215	−0.067		0.000	0.002		−0.070		0.002	−0.002	−2.35	17.64			−2.34	16.84
136	216	−0.075		0.007	0.001		−0.079		−0.006	0.000	−1.49	21.35			−1.48	20.54
137	217	−0.083		0.007	0.002		−0.087		−0.005	−0.001	−0.68	27.01			−0.66	26.19
138	218	−0.083		0.007	0.001		−0.087		−0.005	0.000	−0.08	30.71			−0.06	29.88
139	219	0.142		−0.060	−0.010		0.154		0.083	0.023	0.24	36.12			0.54	35.56
140	220	0.150		−0.060	−0.005		0.162		0.084	0.019	0.58	39.80			0.88	39.25
141	221	0.158		−0.060	0.000		0.170		0.085	0.014	0.53	45.08			0.82	44.51
142	222	0.175		−0.053	0.004		0.189		0.079	0.010	0.85	48.98			1.12	48.39
143	223	0.183		−0.047	0.009		0.197		0.073	0.004	0.78	54.46			1.03	53.85
144	224	0.183		−0.040	0.009		0.197		0.064	0.002	0.88	58.38			1.10	57.74
145	225	0.192		−0.040	0.016		0.207		0.066	−0.005	0.65	63.93			0.90	63.32
146	226	0.192		−0.033	0.016		0.207		0.057	−0.006	0.76	68.09			0.99	67.47
147	227	0.200		−0.027	0.023		0.216		0.052	−0.015	0.45	73.77			0.71	73.18
148	228	0.200		−0.020	0.021		0.216		0.043	−0.014	0.48	78.07			0.72	77.47
149	229	0.200		−0.013	0.022		0.216		0.035	−0.017	0.13	83.92			0.36	83.32
150	230	0.200		−0.007	0.020		0.216		0.027	−0.017	0.17	88.46			0.39	87.86
151	231	0.200		0.000	0.023		0.217		0.019	−0.021	−0.17	94.53			0.07	93.96
152	232	0.208		0.013	0.023		0.226		0.005	−0.024	−0.11	99.29			0.17	98.79
153	233	0.200		0.013	0.018		0.217		0.003	−0.020	−0.19	105.83			0.04	105.28
154	234	0.200		0.020	0.013		0.218		−0.006	−0.016	−0.02	110.91			0.19	110.37
155	235	0.192		0.020	0.007		0.209		−0.008	−0.010	−0.16	117.58			0.01	117.02
156	236	0.183		0.027	0.005		0.199		−0.018	−0.010	−0.13	122.73			0.05	122.20
157	237	0.175		0.033	0.001		0.190		−0.027	−0.007	−0.42	129.44			−0.25	128.93
158	238	0.175		0.040	−0.002		0.191		−0.035	−0.005	−0.51	134.67			−0.30	134.23
159	239	0.167		0.040	−0.004		0.182		−0.037	−0.003	−0.94	141.45			−0.73	141.01
160	240	0.175		0.053	−0.005		0.191		−0.051	−0.005	−1.27	146.62			−0.97	146.32
161	241	0.183		0.060	−0.009		0.201		−0.059	−0.003	−1.80	153.48			−1.43	153.27
162	242	0.183		0.067	−0.009		0.201		−0.067	−0.004	−1.99	158.99			−1.55	158.89
163	243	0.175		0.073	−0.014		0.192		−0.076	0.000	−2.33	166.22			−1.82	166.22
164	244	−0.058		0.000	0.002		−0.061		0.001	−0.002	−0.13	174.31			−0.12	173.85
165	245	−0.058		0.000	0.001		−0.061		0.001	−0.001	−0.63	181.55			−0.61	181.12
166	246	−0.067		0.000	0.000		−0.070		0.002	0.000	−1.24	187.02			−1.22	186.63
167	247	−0.075		0.000	0.000		−0.079		0.002	0.000	−2.12	194.06			−2.09	193.71
168	248	−0.092		0.007	−0.001		−0.096		−0.005	0.002	−2.86	199.57			−2.81	199.29
169	249	−0.100		0.007	−0.002		−0.105		−0.004	0.003	−3.72	206.79			−3.67	206.55
170	250	−0.100		0.000	−0.004		−0.104		0.004	0.004	−4.13	212.82			−4.08	212.62
171	251	−0.100		0.000	−0.006		−0.104		0.004	0.006	−4.83	220.37			−4.77	220.23
172	252	−0.100		0.000	−0.007		−0.104		0.004	0.007	−5.20	226.60			−5.14	226.51
173	253	−0.100		0.000	−0.004		−0.104		0.004	0.004	−5.88	234.34			−5.82	234.28

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 80 (Hg)																
174	254	−0.092		0.013	0.000		−0.096		−0.012	0.001	−6.14	240.85			−6.08	240.84
175	255	−0.092		0.027	0.004		−0.096		−0.028	−0.001	−7.00	248.57			−6.89	248.66
176	256	−0.092		0.033	0.005		−0.096		−0.035	−0.001	−7.35	255.16			−7.20	255.34
177	257	−0.092		0.033	0.003		−0.096		−0.035	0.001	−8.06	263.17			−7.91	263.40
178	258	−0.083		0.033	−0.003		−0.087		−0.035	0.006	−8.28	270.06			−8.12	270.35
179	259	−0.050		0.020	−0.002		−0.053		−0.022	0.003	−8.46	278.76			−8.40	279.00
180	260	−0.050		0.027	0.005		−0.052		−0.030	−0.003	−8.72	285.76			−8.63	286.10
181	261	−0.042		0.027	0.009		−0.044		−0.031	−0.007	−9.33	294.19			−9.22	294.60
182	262	−0.025		0.020	0.007		−0.026		−0.023	−0.006	−9.48	301.45			−9.41	301.87
183	263	0.000		0.007	0.000		0.000		−0.008	0.000	−10.07	310.04			−10.07	310.46
184	264	0.000		0.000	−0.001		0.000		0.000	0.001	−9.86	317.82			−9.86	318.29
185	265	0.000		0.007	0.000		0.000		−0.008	0.000	−9.07	327.93			−9.07	328.47
186	266	0.000		0.007	0.000		0.000		−0.008	0.000	−8.34	336.39			−8.33	336.98
Z = 81 (Tl)																
92	173	−0.033		0.007	−0.001		−0.035		−0.008	0.001	−1.98	8.00			−1.99	10.09
93	174	−0.042		0.007	0.000		−0.044		−0.007	0.000	−1.19	5.92			−1.20	7.89
94	175	−0.042		0.007	−0.001		−0.044		−0.007	0.001	−0.64	2.12			−0.64	3.98
95	176	−0.050		0.007	0.000		−0.053		−0.007	0.000	−0.03	0.30			−0.04	2.04
96	177	−0.050		0.007	0.000		−0.053		−0.007	0.000	0.33	−3.24			0.32	−1.61
97	178	−0.050		0.007	0.000		−0.053		−0.007	0.000	0.70	−4.87			0.69	−3.35
98	179	−0.050		0.007	0.000		−0.053		−0.007	0.000	0.88	−8.17	−7.97	0.150	0.87	−6.75
99	180	−0.050		0.007	0.001		−0.053		−0.007	−0.001	1.13	−9.50			1.12	−8.19
100	181	−0.050		0.007	0.000		−0.053		−0.007	0.000	1.11	−12.57			1.11	−11.35
101	182	−0.050		0.007	0.001		−0.053		−0.007	−0.001	1.22	−13.65			1.22	−12.53
102	183	−0.050		0.007	0.000		−0.053		−0.007	0.000	1.06	−16.44			1.06	−15.42
103	184	−0.050		0.007	0.000		−0.053		−0.007	0.000	1.04	−17.26			1.04	−16.33
104	185	−0.050		0.007	0.000		−0.053		−0.007	0.000	0.81	−19.74			0.80	−18.90
105	186	−0.058		0.007	0.000		−0.061		−0.007	0.000	0.60	−20.36			0.60	−19.61
106	187	−0.050		0.007	0.000		−0.053		−0.007	0.000	0.31	−22.51			0.31	−21.84
107	188	−0.058		0.007	0.000		−0.061		−0.007	0.000	0.00	−22.88			−0.01	−22.29
108	189	−0.050		0.007	−0.001		−0.053		−0.007	0.001	−0.40	−24.76			−0.41	−24.25
109	190	−0.058		0.007	0.000		−0.061		−0.007	0.000	−0.79	−24.84			−0.80	−24.41
110	191	−0.050		0.007	0.000		−0.053		−0.007	0.000	−1.32	−26.49			−1.32	−26.13
111	192	−0.058		0.013	0.000		−0.061		−0.014	0.001	−1.79	−26.30			−1.79	−26.02
112	193	−0.050		0.007	0.000		−0.053		−0.007	0.000	−2.43	−27.71	−27.44	0.200	−2.43	−27.50
113	194	−0.050		0.013	0.001		−0.053		−0.014	0.000	−2.91	−27.19			−2.91	−27.04
114	195	−0.050		0.013	0.001		−0.053		−0.014	0.000	−3.72	−28.42	−28.27	0.140	−3.72	−28.34
115	196	−0.050		0.013	0.001		−0.053		−0.014	0.000	−4.38	−27.75			−4.38	−27.73
116	197	−0.042		0.013	0.001		−0.044		−0.014	0.000	−5.13	−28.59	−28.40	0.050	−5.13	−28.63
117	198	−0.042		0.013	0.002		−0.044		−0.014	−0.001	−5.87	−27.68	−27.52	0.080	−5.87	−27.78
118	199	−0.042		0.013	0.002		−0.044		−0.014	−0.001	−6.64	−28.22	−28.14	0.100	−6.64	−28.38
119	200	−0.042		0.013	0.002		−0.044		−0.014	−0.001	−7.49	−27.10	−27.07	0.007	−7.49	−27.31
120	201	−0.042		0.013	0.003		−0.044		−0.014	−0.002	−8.27	−27.33	−27.20	0.015	−8.27	−27.58
121	202	−0.042		0.013	0.003		−0.044		−0.014	−0.002	−9.25	−26.04	−26.00	0.015	−9.24	−26.34
122	203	−0.033		0.013	0.003		−0.035		−0.015	−0.002	−9.97	−25.90	−25.78	0.004	−9.97	−26.25
123	204	−0.042		0.020	0.007		−0.044		−0.023	−0.006	−10.83	−24.19	−24.37	0.004	−10.82	−24.58
124	205	−0.033		0.013	0.004		−0.035		−0.015	−0.003	−11.58	−23.78	−23.84	0.004	−11.57	−24.22
125	206	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−12.58	−21.92	−22.28	0.004	−12.58	−22.41
126	207	−0.008		0.000	0.000		−0.008		0.000	0.000	−12.82	−20.71	−21.05	0.006	−12.82	−21.23
127	208	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−11.89	−16.64	−16.77	0.004	−11.89	−17.20
128	209	−0.008		−0.007	0.000		−0.008		0.008	0.000	−10.89	−13.89	−13.65	0.010	−10.89	−14.49
129	210	−0.017		−0.007	−0.005		−0.018		0.008	0.005	−9.60	−9.19	−9.26	0.012	−9.59	−9.81
130	211	−0.017		−0.007	0.000		−0.018		0.008	0.000	−8.40	−5.97			−8.40	−6.63
131	212	−0.017		0.000	0.004		−0.018		0.000	−0.004	−7.34	−1.22			−7.34	−1.91
132	213	−0.025		−0.007	0.000		−0.026		0.008	0.000	−6.16	2.25			−6.16	1.54
133	214	−0.025		0.000	0.003		−0.026		0.000	−0.003	−5.15	7.20			−5.15	6.47
134	215	−0.033		0.000	−0.001		−0.035		0.000	0.001	−4.12	10.79			−4.12	10.03

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 81 (Tl)																
135	216	−0.042		0.000	−0.001		−0.044		0.001	0.001	−3.12	15.99			−3.12	15.21
136	217	−0.042		0.000	0.000		−0.044		0.001	0.000	−2.33	19.59			−2.33	18.80
137	218	0.050	0.070	−0.013	0.001	0.000	0.055	−0.095	0.018	0.003	−1.88	24.49			−1.78	23.78
138	219	0.050	0.064	−0.013	0.001	−0.001	0.055	−0.087	0.018	0.003	−1.17	28.27			−1.08	27.54
139	220	0.100	0.059	−0.040	0.005	−0.002	0.108	−0.082	0.054	0.003	−0.47	33.67			−0.31	32.99
140	221	0.142		−0.060	−0.008		0.154		0.083	0.021	0.23	37.68			0.50	37.11
141	222	0.150		−0.060	−0.003		0.162		0.084	0.017	0.25	42.63			0.52	42.04
142	223	0.167		−0.060	0.004		0.180		0.087	0.011	0.60	46.54			0.88	45.96
143	224	0.175		−0.053	0.008		0.188		0.079	0.006	0.57	51.67			0.82	51.05
144	225	0.175		−0.047	0.009		0.188		0.072	0.003	0.70	55.60			0.93	54.96
145	226	0.183		−0.040	0.014		0.197		0.064	−0.003	0.57	60.85			0.78	60.18
146	227	0.192		−0.033	0.019		0.207		0.058	−0.010	0.70	65.00			0.92	64.35
147	228	0.200		−0.027	0.025		0.216		0.052	−0.017	0.40	70.30			0.64	69.68
148	229	0.200		−0.020	0.022		0.216		0.043	−0.015	0.44	74.60			0.67	73.96
149	230	0.200		−0.013	0.023		0.216		0.035	−0.018	0.10	80.08			0.31	79.44
150	231	0.200		−0.007	0.021		0.216		0.027	−0.018	0.14	84.59			0.35	83.95
151	232	0.200		0.000	0.023		0.217		0.019	−0.021	−0.17	90.31			0.06	89.70
152	233	0.208		0.007	0.025		0.226		0.012	−0.025	−0.09	95.07			0.19	94.52
153	234	0.200		0.007	0.020		0.217		0.010	−0.020	−0.14	101.26			0.07	100.65
154	235	0.200		0.013	0.014		0.217		0.003	−0.016	0.07	106.37			0.25	105.75
155	236	0.200		0.020	0.010		0.218		−0.006	−0.013	−0.10	112.64			0.07	112.02
156	237	0.192		0.027	0.005		0.209		−0.017	−0.010	−0.02	117.82			0.16	117.22
157	238	0.175		0.027	0.001		0.190		−0.020	−0.006	−0.29	124.19			−0.15	123.57
158	239	0.175		0.033	−0.001		0.190		−0.027	−0.005	−0.35	129.43			−0.18	128.86
159	240	0.167		0.040	−0.004		0.182		−0.037	−0.003	−0.82	135.79			−0.64	135.26
160	241	0.050		0.007	0.001		0.053		−0.007	−0.001	0.85	142.95			0.86	142.28
161	242	0.050		0.007	0.001		0.053		−0.007	−0.001	0.47	149.60			0.48	148.94
162	243	0.050		0.007	−0.001		0.053		−0.007	0.001	0.10	154.92			0.12	154.29
163	244	0.050		0.007	−0.002		0.053		−0.007	0.002	−0.31	161.71			−0.30	161.11
164	245	−0.050		0.000	0.000		−0.053		0.001	0.000	−0.69	167.21			−0.68	166.64
165	246	0.050		−0.007	−0.001		0.053		0.009	0.001	−1.11	174.17			−1.10	173.63
166	247	0.050		−0.013	0.001		0.053		0.017	0.000	−1.42	179.92			−1.40	179.43
167	248	0.050		−0.013	0.003		0.053		0.017	−0.002	−2.10	186.81			−2.07	186.35
168	249	0.050		−0.007	0.006		0.053		0.009	−0.006	−2.58	192.57			−2.56	192.15
169	250	0.050		−0.007	0.010		0.053		0.010	−0.009	−3.15	199.73			−3.11	199.36
170	251	0.058		0.000	0.014		0.062		0.002	−0.014	−3.51	205.79			−3.44	205.49
171	252	0.058		0.000	0.011		0.062		0.002	−0.011	−4.12	213.09			−4.07	212.80
172	253	0.050		0.007	0.005		0.053		−0.007	−0.005	−4.62	219.19			−4.59	218.91
173	254	0.050		0.013	0.000		0.053		−0.014	−0.001	−5.24	226.63			−5.22	226.40
174	255	0.050		0.027	−0.009		0.053		−0.031	0.007	−5.64	232.99			−5.54	232.88
175	256	0.050		0.027	−0.014		0.053		−0.031	0.012	−6.40	240.47			−6.27	240.43
176	257	−0.067		0.013	−0.002		−0.070		−0.013	0.003	−7.24	246.56			−7.20	246.47
177	258	−0.058		0.013	−0.003		−0.061		−0.014	0.004	−7.78	254.41			−7.74	254.37
178	259	−0.050		0.007	−0.010		−0.053		−0.007	0.010	−8.11	261.17			−8.06	261.19
179	260	−0.033		0.013	−0.004		−0.035		−0.015	0.004	−8.94	268.89			−8.91	268.94
180	261	−0.017		0.007	−0.001		−0.018		−0.008	0.001	−9.20	275.88			−9.20	275.95
181	262	−0.017		0.007	0.000		−0.018		−0.008	0.000	−9.87	283.92			−9.86	284.04
182	263	−0.008		0.007	0.000		−0.008		−0.008	0.000	−10.05	291.14			−10.04	291.32
183	264	0.000		0.000	−0.001		0.000		0.000	0.001	−10.52	299.52			−10.52	299.75
184	265	0.000		0.000	−0.001		0.000		0.000	0.001	−10.30	307.30			−10.30	307.58
185	266	0.000		0.007	0.000		0.000		−0.008	0.000	−9.49	317.11			−9.49	317.46
186	267	0.000		0.000	−0.001		0.000		0.000	0.001	−8.77	325.54			−8.77	325.94
187	268	0.000	0.050	0.007	0.000	0.000	0.001	−0.067	−0.007	0.002	−7.70	335.77			−7.57	336.35
188	269	0.000	0.057	0.007	0.000	0.000	0.001	−0.076	−0.007	0.002	−6.76	344.56			−6.59	345.24
Z = 82 (Pb)																
93	175	0.008		0.007	−0.001		0.008		−0.008	0.001	−1.50	13.72			−1.50	15.97
94	176	0.008		0.007	−0.001		0.008		−0.008	0.001	−0.96	9.42			−0.96	11.55

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 82$ (Pb)																
95	177	0.008		0.007	−0.001		0.008		−0.008	0.001	−0.44	7.45			−0.44	9.46
96	178	0.008		0.007	−0.001		0.008		−0.008	0.001	−0.07	3.43			−0.07	5.33
97	179	0.008		0.013	−0.002		0.009		−0.015	0.002	0.34	1.77			0.34	3.55
98	180	0.008		0.007	−0.003		0.008		−0.008	0.003	0.48	−2.03			0.48	−0.36
99	181	0.017	0.013	−0.007	0.000	−0.003	0.018	−0.018	0.009	0.000	0.73	−3.43			0.73	−1.87
100	182	0.008		0.007	−0.004		0.008		−0.008	0.004	0.75	−6.93	−6.82	0.019	0.74	−5.48
101	183	0.008		−0.013	−0.004		0.009		0.015	0.004	0.84	−8.09			0.84	−6.73
102	184	0.008	0.012	0.007	0.000	−0.002	0.009	−0.016	−0.008	0.000	0.80	−11.24			0.80	−9.99
103	185	0.008		−0.013	−0.002		0.009		0.015	0.002	0.80	−12.09			0.80	−10.94
104	186	0.000		0.007	0.000		0.000		−0.008	0.000	0.61	−14.99			0.61	−13.94
105	187	0.000		0.013	−0.001		0.000		−0.015	0.001	0.56	−15.52			0.56	−14.56
106	188	0.000		0.007	−0.001		0.000		−0.008	0.001	0.21	−18.18			0.21	−17.31
107	189	0.000		0.007	−0.001		0.000		−0.008	0.001	−0.02	−18.52			−0.02	−17.73
108	190	0.000		0.007	0.000		0.000		−0.008	0.000	−0.43	−20.87			−0.44	−20.17
109	191	0.000		0.013	0.000		0.000		−0.015	0.000	−0.70	−20.88			−0.70	−20.27
110	192	0.000		0.007	0.000		0.000		−0.008	0.000	−1.33	−23.09			−1.33	−22.55
111	193	0.000		0.013	0.000		0.000		−0.015	0.000	−1.69	−22.83			−1.69	−22.38
112	194	0.000		0.007	0.000		0.000		−0.008	0.000	−2.42	−24.79			−2.43	−24.41
113	195	0.008		0.013	−0.001		0.009		−0.015	0.001	−2.88	−24.30			−2.88	−23.99
114	196	0.000		0.007	0.000		0.000		−0.008	0.000	−3.68	−25.96			−3.68	−25.72
115	197	0.000		0.007	0.000		0.000		−0.008	0.000	−4.26	−25.26			−4.27	−25.09
116	198	0.000		0.007	0.000		0.000		−0.008	0.000	−5.08	−26.61			−5.08	−26.50
117	199	0.000		0.007	0.000		0.000		−0.008	0.000	−5.75	−25.67	−25.27	0.070	−5.75	−25.64
118	200	0.000		0.007	0.000		0.000		−0.008	0.000	−6.59	−26.71			−6.59	−26.73
119	201	0.000		0.007	0.000		0.000		−0.008	0.000	−7.40	−25.61	−25.30	0.030	−7.40	−25.69
120	202	0.008		0.007	−0.001		0.008		−0.008	0.001	−8.22	−26.30	−25.96	0.010	−8.22	−26.44
121	203	0.008		0.007	−0.001		0.008		−0.008	0.001	−9.13	−24.99	−24.81	0.007	−9.14	−25.18
122	204	−0.008		0.007	0.001		−0.008		−0.008	−0.001	−10.02	−25.44	−25.13	0.004	−10.02	−25.68
123	205	−0.017		0.013	0.004		−0.018		−0.015	−0.004	−11.00	−23.90	−23.79	0.004	−10.99	−24.18
124	206	−0.008		0.007	0.000		−0.008		−0.008	0.000	−11.82	−23.98	−23.81	0.004	−11.82	−24.32
125	207	−0.008		0.000	0.000		−0.008		0.000	0.000	−12.68	−22.02	−22.48	0.004	−12.68	−22.41
126	208	0.000	0.010	0.000	0.000	0.000	0.000	−0.013	0.000	0.000	−12.84	−21.15	−21.77	0.004	−12.84	−21.58
127	209	−0.008		−0.007	0.002		−0.008		0.008	−0.002	−11.96	−17.17	−17.64	0.004	−11.97	−17.64
128	210	0.000		−0.007	0.000		0.000		0.008	0.000	−10.92	−14.80	−14.75	0.004	−10.92	−15.31
129	211	0.008		−0.007	0.001		0.008		0.008	−0.001	−9.65	−10.16	−10.49	0.003	−9.65	−10.70
130	212	0.000		−0.007	0.000		0.000		0.008	0.000	−8.50	−7.39	−7.57	0.004	−8.50	−7.98
131	213	0.008	0.041	−0.007	0.000	0.003	0.009	−0.055	0.009	0.001	−7.26	−2.52			−7.24	−3.11
132	214	0.008	0.036	−0.007	0.000	−0.001	0.009	−0.049	0.009	0.001	−6.22	0.41	−0.19	0.003	−6.20	−0.21
133	215	0.008	0.072	−0.007	0.000	−0.005	0.011	−0.097	0.010	0.003	−5.23	5.32			−5.15	4.71
134	216	0.008	0.069	−0.007	0.000	−0.001	0.010	−0.093	0.010	0.003	−4.36	8.34			−4.28	7.72
135	217	0.017	0.090	−0.007	0.000	0.001	0.022	−0.122	0.012	0.006	−3.59	13.27			−3.46	12.67
136	218	0.017	0.080	−0.013	0.000	−0.002	0.021	−0.109	0.018	0.005	−2.80	16.48			−2.68	15.85
137	219	0.025	0.081	−0.013	0.001	−0.001	0.029	−0.110	0.018	0.004	−2.09	21.60			−1.98	20.94
138	220	0.033	0.077	−0.013	0.001	−0.001	0.038	−0.105	0.018	0.004	−1.36	25.00			−1.24	24.33
139	221	0.142		−0.067	−0.011		0.154		0.092	0.026	−0.05	30.97			0.26	30.48
140	222	0.150		−0.067	−0.004		0.162		0.093	0.019	0.37	34.32			0.68	33.81
141	223	0.158		−0.067	0.002		0.171		0.094	0.014	0.38	39.22			0.69	38.69
142	224	0.167		−0.060	0.006		0.180		0.087	0.009	0.65	42.66			0.93	42.09
143	225	0.183		−0.053	0.012		0.197		0.081	0.002	0.72	47.86			0.97	47.26
144	226	0.183		−0.047	0.014		0.197		0.073	−0.001	0.82	51.37			1.06	50.75
145	227	0.192		−0.047	0.022		0.206		0.075	−0.009	0.64	56.54			0.92	55.96
146	228	0.192		−0.040	0.022		0.206		0.066	−0.011	0.76	60.31			1.03	59.70
147	229	0.200		−0.033	0.028		0.215		0.060	−0.018	0.46	65.59			0.75	65.00
148	230	0.200		−0.027	0.026		0.216		0.052	−0.018	0.55	69.54			0.82	68.94
149	231	0.200		−0.020	0.027		0.216		0.044	−0.020	0.22	75.01			0.48	74.39
150	232	0.200		−0.013	0.025		0.216		0.035	−0.020	0.30	79.18			0.54	78.55
151	233	0.208		0.000	0.026		0.226		0.021	−0.024	−0.04	84.85			0.22	84.24

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 82 (Pb)																
152	234	0.208		0.007	0.028		0.226		0.013	−0.028	0.12	89.32			0.41	88.75
153	235	0.200		0.007	0.023		0.217		0.011	−0.023	0.09	95.51			0.33	94.89
154	236	0.200		0.013	0.017		0.217		0.003	−0.019	0.32	100.26			0.53	99.62
155	237	0.200		0.020	0.013		0.218		−0.006	−0.016	0.21	106.57			0.41	105.93
156	238	0.192		0.020	0.008		0.209		−0.008	−0.011	0.36	111.45			0.53	110.79
157	239	0.183		0.027	0.003		0.199		−0.018	−0.008	0.09	117.79			0.24	117.14
158	240	0.175		0.033	−0.001		0.190		−0.027	−0.005	0.07	122.71			0.24	122.09
159	241	0.175		0.040	−0.003		0.191		−0.035	−0.004	−0.35	129.10			−0.16	128.52
160	242	0.050		0.007	0.001		0.053		−0.007	−0.001	0.91	135.49			0.92	134.75
161	243	0.050		0.007	0.001		0.053		−0.007	−0.001	0.52	142.10			0.53	141.38
162	244	0.050		0.007	0.000		0.053		−0.007	0.000	0.16	147.08			0.17	146.37
163	245	0.050		0.000	−0.001		0.053		0.001	0.001	−0.26	153.85			−0.25	153.16
164	246	0.042		0.000	0.000		0.045		0.001	0.000	−0.81	158.81			−0.81	158.15
165	247	0.050		−0.007	0.000		0.053		0.009	0.000	−1.08	165.92			−1.06	165.29
166	248	0.050		−0.013	0.001		0.053		0.017	0.000	−1.39	171.32			−1.36	170.73
167	249	0.050		−0.013	0.003		0.053		0.017	−0.002	−2.06	178.19			−2.03	177.63
168	250	0.050		−0.007	0.007		0.053		0.010	−0.006	−2.51	183.64			−2.48	183.11
169	251	0.050		−0.007	0.011		0.053		0.010	−0.010	−3.08	190.79			−3.03	190.31
170	252	0.050		−0.007	0.016		0.053		0.010	−0.015	−3.47	196.46			−3.39	196.05
171	253	0.050		0.000	0.012		0.053		0.001	−0.012	−4.08	203.74			−4.03	203.34
172	254	0.050		0.000	0.008		0.053		0.001	−0.008	−4.43	209.64			−4.41	209.25
173	255	0.050		0.013	0.001		0.053		−0.014	−0.002	−5.06	217.07			−5.03	216.72
174	256	0.050		0.020	−0.007		0.053		−0.023	0.006	−5.42	223.13			−5.36	222.85
175	257	0.050		0.020	−0.011		0.053		−0.023	0.010	−6.13	230.65			−6.05	230.42
176	258	0.042		0.020	−0.009		0.045		−0.023	0.008	−6.60	236.76			−6.53	236.57
177	259	−0.042		−0.007	−0.012		−0.044		0.009	0.011	−7.47	244.28			−7.41	244.11
178	260	−0.033		0.000	−0.010		−0.035		0.001	0.010	−7.93	250.57			−7.89	250.43
179	261	−0.017		0.007	−0.003		−0.018		−0.008	0.003	−8.73	258.31			−8.72	258.18
180	262	−0.008		0.000	−0.001		−0.008		0.000	0.001	−8.95	265.00			−8.96	264.91
181	263	−0.008		0.007	0.000		−0.008		−0.008	0.000	−9.66	272.99			−9.66	272.95
182	264	0.000		0.000	−0.001		0.000		0.000	0.001	−9.79	279.93			−9.79	279.94
183	265	0.000		0.000	−0.001		0.000		0.000	0.001	−10.24	288.32			−10.24	288.38
184	266	0.000		0.000	−0.001		0.000		0.000	0.001	−10.01	295.78			−10.02	295.89
185	267	0.000		0.007	0.000		0.000		−0.008	0.000	−9.18	305.61			−9.18	305.77
186	268	0.000		0.000	−0.001		0.000		0.000	0.001	−8.47	313.71			−8.47	313.92
187	269	0.000	0.057	0.007	0.000	0.000	0.001	−0.076	−0.007	0.002	−7.45	323.86			−7.29	324.29
188	270	0.000	0.071	0.000	0.000	−0.001	0.002	−0.095	0.002	0.003	−6.57	332.27			−6.32	332.85
189	271	0.000	0.084	0.007	0.000	0.000	0.003	−0.113	−0.005	0.004	−6.06	342.06			−5.70	342.80
190	272	0.000	0.092	0.000	0.000	−0.001	0.004	−0.124	0.004	0.005	−5.42	350.38			−4.98	351.26
191	273	0.000	0.101	0.000	0.000	−0.001	0.005	−0.136	0.004	0.007	−5.19	360.04			−4.66	361.06
Z = 83 (Bi)																
95	178	0.050		−0.020	−0.011		0.053		0.025	0.012	0.62	18.31			0.62	20.60
96	179	0.050		−0.020	−0.009		0.053		0.025	0.010	1.02	14.27			1.01	16.43
97	180	0.050		−0.020	−0.009		0.053		0.025	0.010	1.40	12.10			1.39	14.14
98	181	−0.050		−0.013	0.000		−0.052		0.016	−0.001	1.84	8.53			1.83	10.46
99	182	0.050		−0.013	−0.008		0.053		0.017	0.009	1.85	6.41			1.84	8.23
100	183	−0.050		−0.013	0.000		−0.052		0.016	−0.001	2.03	3.02			2.02	4.72
101	184	−0.050		−0.013	0.000		−0.052		0.016	−0.001	2.12	1.39			2.12	2.98
102	185	−0.050		−0.013	0.000		−0.052		0.016	−0.001	1.96	−1.93			1.96	−0.45
103	186	−0.050		−0.013	0.000		−0.052		0.016	−0.001	1.92	−3.30			1.91	−1.92
104	187	−0.050		−0.013	0.000		−0.052		0.016	−0.001	1.69	−6.28			1.69	−5.01
105	188	−0.050		−0.007	0.000		−0.052		0.009	0.000	1.56	−7.35			1.55	−6.17
106	189	−0.050		−0.007	0.000		−0.052		0.009	0.000	1.24	−10.05			1.23	−8.97
107	190	−0.050		−0.007	0.000		−0.052		0.009	0.000	0.96	−10.88			0.96	−9.89
108	191	−0.050		−0.007	0.000		−0.052		0.009	0.000	0.53	−13.31			0.53	−12.41
109	192	−0.050		−0.007	0.000		−0.052		0.009	0.000	0.17	−13.86			0.17	−13.05
110	193	−0.050		−0.007	0.000		−0.052		0.009	0.000	−0.39	−16.05			−0.40	−15.32

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 83$ (Bi)																
111	194	−0.050		−0.007	0.000		−0.052		0.009	0.000	−0.82	−16.32			−0.82	−15.68
112	195	−0.050		−0.007	0.000		−0.052		0.009	0.000	−1.49	−18.25			−1.49	−17.69
113	196	−0.050		−0.007	0.001		−0.052		0.009	−0.001	−1.98	−18.23	−17.96	0.690	−1.98	−17.75
114	197	−0.050		−0.007	−0.001		−0.052		0.009	0.001	−2.76	−19.94	−19.64	0.170	−2.77	−19.53
115	198	−0.050		−0.007	−0.001		−0.052		0.009	0.001	−3.42	−19.75	−19.54	0.150	−3.42	−19.42
116	199	−0.042		−0.007	0.000		−0.044		0.009	0.000	−4.24	−21.14	−20.92	0.100	−4.24	−20.88
117	200	−0.042		−0.007	−0.001		−0.044		0.009	0.001	−4.94	−20.68	−20.40	0.100	−4.94	−20.48
118	201	−0.042		−0.007	−0.001		−0.044		0.009	0.001	−5.75	−21.73	−21.47	0.050	−5.75	−21.60
119	202	−0.042		0.000	0.001		−0.044		0.001	−0.001	−6.57	−21.06	−20.81	0.070	−6.57	−21.00
120	203	−0.033		−0.007	0.001		−0.035		0.009	−0.001	−7.39	−21.81	−21.58	0.040	−7.39	−21.81
121	204	−0.042		−0.007	−0.001		−0.044		0.009	0.001	−8.28	−20.90	−20.73	0.040	−8.28	−20.96
122	205	−0.033		0.007	0.003		−0.035		−0.008	−0.003	−9.08	−21.31	−21.08	0.008	−9.08	−21.42
123	206	−0.033		0.013	0.007		−0.035		−0.015	−0.006	−9.99	−20.11	−20.05	0.008	−9.98	−20.28
124	207	−0.025		0.013	0.003		−0.026		−0.015	−0.002	−10.77	−20.20	−20.08	0.004	−10.77	−20.42
125	208	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−11.70	−18.74	−18.89	0.004	−11.70	−19.01
126	209	−0.008		−0.007	0.002		−0.008		0.008	−0.002	−11.95	−17.99	−18.28	0.004	−11.95	−18.31
127	210	−0.017		−0.013	0.003		−0.018		0.015	−0.003	−11.07	−14.43	−14.81	0.004	−11.07	−14.79
128	211	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−9.99	−12.05	−11.87	0.006	−9.99	−12.47
129	212	−0.017		−0.013	−0.005		−0.018		0.016	0.005	−8.77	−7.87	−8.14	0.004	−8.76	−8.32
130	213	−0.017		−0.013	0.002		−0.018		0.015	−0.002	−7.64	−5.18	−5.24	0.008	−7.64	−5.67
131	214	0.025		−0.020	−0.010		0.027		0.024	0.011	−6.37	−0.66	−1.22	0.011	−6.34	−1.17
132	215	−0.025		−0.013	0.002		−0.026		0.016	−0.002	−5.41	2.14	1.71	0.100	−5.41	1.58
133	216	0.042	0.100	−0.027	0.003	−0.013	0.049	−0.137	0.037	0.006	−4.51	6.55			−4.36	6.10
134	217	0.042	0.094	−0.027	0.003	−0.014	0.048	−0.129	0.036	0.005	−3.70	9.48			−3.55	8.99
135	218	0.050	0.094	−0.033	0.004	−0.015	0.057	−0.129	0.044	0.005	−2.99	13.94			−2.83	13.44
136	219	0.058	0.090	−0.033	0.004	−0.016	0.065	−0.124	0.044	0.005	−2.15	17.17			−1.98	16.65
137	220	0.092	0.089	−0.047	0.006	−0.016	0.101	−0.124	0.064	0.006	−1.52	21.81			−1.30	21.32
138	221	0.092	0.079	−0.047	0.006	−0.014	0.101	−0.109	0.063	0.005	−0.90	25.08			−0.69	24.55
139	222	0.133		−0.067	−0.013		0.144		0.091	0.027	−0.35	29.89			−0.06	29.41
140	223	0.142		−0.067	−0.006		0.154		0.092	0.021	0.05	33.19			0.34	32.69
141	224	0.150		−0.067	0.000		0.162		0.093	0.015	0.10	37.74			0.38	37.22
142	225	0.167		−0.067	0.008		0.180		0.096	0.008	0.51	41.29			0.81	40.77
143	226	0.175		−0.060	0.014		0.188		0.088	0.001	0.51	46.03			0.78	45.47
144	227	0.175		−0.053	0.015		0.188		0.079	−0.002	0.64	49.54			0.88	48.94
145	228	0.183		−0.047	0.020		0.197		0.073	−0.008	0.47	54.34			0.71	53.73
146	229	0.192		−0.040	0.024		0.206		0.067	−0.013	0.64	58.13			0.90	57.52
147	230	0.200		−0.040	0.032		0.215		0.069	−0.020	0.36	63.04			0.67	62.48
148	231	0.200		−0.033	0.030		0.215		0.060	−0.020	0.46	66.99			0.76	66.40
149	232	0.200		−0.027	0.031		0.215		0.053	−0.023	0.15	72.09			0.43	71.50
150	233	0.200		−0.013	0.026		0.216		0.035	−0.021	0.26	76.27			0.50	75.63
151	234	0.200		−0.007	0.029		0.216		0.028	−0.026	−0.03	81.61			0.23	80.99
152	235	0.208		0.000	0.031		0.226		0.021	−0.029	0.11	86.04			0.42	85.46
153	236	0.200		0.007	0.024		0.217		0.011	−0.024	0.11	91.89			0.34	91.24
154	237	0.200		0.007	0.019		0.217		0.010	−0.019	0.35	96.63			0.56	95.96
155	238	0.192		0.013	0.013		0.208		0.001	−0.015	0.28	102.60			0.43	101.88
156	239	0.183		0.013	0.009		0.198		−0.001	−0.011	0.41	107.45			0.55	106.72
157	240	0.175		0.020	0.004		0.190		−0.011	−0.007	0.18	113.47			0.30	112.74
158	241	0.167		0.027	0.000		0.181		−0.021	−0.005	0.18	118.38			0.31	117.67
159	242	0.167		0.033	−0.002		0.181		−0.028	−0.004	−0.21	124.44			−0.07	123.75
160	243	0.058		−0.007	−0.002		0.062		0.010	0.003	1.05	130.81			1.07	130.01
161	244	0.050		0.000	−0.002		0.053		0.001	0.002	0.77	137.18			0.78	136.39
162	245	0.050		0.000	−0.004		0.053		0.001	0.004	0.41	142.12			0.42	141.35
163	246	0.050		0.000	−0.005		0.053		0.001	0.005	−0.04	148.51			−0.02	147.76
164	247	−0.050		−0.013	0.001		−0.052		0.016	−0.002	−0.33	153.72			−0.31	153.00
165	248	0.050		−0.013	−0.004		0.053		0.017	0.005	−0.89	160.18			−0.86	159.48
166	249	0.050		−0.027	−0.005		0.053		0.033	0.007	−1.15	165.60			−1.08	164.98
167	250	0.050		−0.020	−0.001		0.053		0.025	0.002	−1.87	172.09			−1.82	171.46

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 83 (Bi)																
168	251	0.050		−0.020	0.003		0.053		0.025	−0.002	−2.27	177.56			−2.22	176.96
169	252	0.050		−0.020	0.008		0.053		0.025	−0.007	−2.83	184.38			−2.77	183.82
170	253	0.058		−0.013	0.013		0.062		0.017	−0.012	−3.14	190.12			−3.07	189.60
171	254	0.058		−0.007	0.009		0.062		0.010	−0.008	−3.76	197.04			−3.72	196.52
172	255	0.050		0.000	0.003		0.053		0.001	−0.003	−4.16	202.88			−4.15	202.36
173	256	0.050		0.007	−0.001		0.053		−0.007	0.001	−4.75	210.00			−4.74	209.52
174	257	0.050		0.020	−0.010		0.053		−0.023	0.009	−5.09	216.07			−5.02	215.68
175	258	0.050		0.020	−0.014		0.053		−0.023	0.013	−5.78	223.26			−5.68	222.94
176	259	−0.050		−0.013	−0.010		−0.052		0.016	0.009	−6.40	229.21			−6.35	228.88
177	260	−0.050		−0.013	−0.013		−0.052		0.017	0.012	−7.02	236.65			−6.94	236.37
178	261	−0.050		−0.007	−0.013		−0.052		0.010	0.012	−7.36	243.05			−7.29	242.80
179	262	−0.033		0.000	−0.006		−0.035		0.001	0.006	−8.22	250.39			−8.20	250.14
180	263	−0.025		0.007	0.000		−0.026		−0.008	0.000	−8.48	257.04			−8.48	256.81
181	264	−0.017		0.013	0.000		−0.018		−0.015	0.000	−9.11	264.77			−9.10	264.60
182	265	−0.008		0.007	−0.001		−0.008		−0.008	0.001	−9.23	271.72			−9.23	271.58
183	266	0.000		0.007	0.000		0.000		−0.008	0.000	−9.67	279.79			−9.67	279.70
184	267	0.000		0.007	0.000		0.000		−0.008	0.000	−9.40	287.29			−9.39	287.24
185	268	0.000		0.013	0.000		0.000		−0.015	0.000	−8.56	296.79			−8.54	296.80
186	269	0.000		0.007	0.000		0.000		−0.008	0.000	−7.86	304.87			−7.85	304.92
187	270	0.000	0.055	0.013	0.000	0.000	0.001	−0.073	−0.014	0.002	−6.82	314.72			−6.66	314.97
188	271	0.000	0.074	0.007	0.000	0.000	0.002	−0.099	−0.006	0.003	−5.98	323.08			−5.71	323.50
189	272	0.000	0.088	0.013	0.000	0.000	0.003	−0.118	−0.012	0.005	−5.45	332.57			−5.07	333.16
190	273	0.000	0.096	0.013	0.000	0.000	0.004	−0.128	−0.012	0.006	−4.78	340.92			−4.31	341.64
191	274	0.000	0.105	0.013	0.000	0.000	0.005	−0.141	−0.011	0.007	−4.57	350.23			−4.01	351.10
192	275	0.000	0.112	0.020	0.000	−0.011	0.006	−0.150	−0.018	0.008	−3.90	358.71			−3.24	359.74
193	276	0.400		0.100	−0.017		0.456		−0.051	−0.022	−1.24	370.62			0.19	372.47
Z = 84 (Po)																
97	181	0.242		−0.033	0.016		0.262		0.068	−0.003	1.43	20.06			1.33	22.29
98	182	0.250		−0.027	0.018		0.271		0.062	−0.006	1.40	15.55			1.32	17.67
99	183	0.267		−0.013	0.022		0.291		0.049	−0.014	1.28	13.24			1.17	15.22
100	184	0.275		−0.007	0.020		0.300		0.044	−0.013	1.21	9.13			1.12	11.00
101	185	0.283		0.007	0.021		0.310		0.029	−0.019	1.07	7.20			0.95	8.95
102	186	0.283		0.013	0.017		0.311		0.021	−0.017	1.12	3.63			1.03	5.28
103	187	0.283		0.020	0.013		0.311		0.012	−0.016	1.09	2.22			0.98	3.75
104	188	0.267		0.020	0.007		0.293		0.007	−0.010	1.32	−0.77			1.25	0.68
105	189	0.250		0.027	0.004		0.274		−0.005	−0.009	1.42	−1.66			1.35	−0.32
106	190	0.250		0.033	−0.004		0.274		−0.014	−0.003	1.48	−4.43			1.42	−3.17
107	191	0.250		0.047	−0.008		0.275		−0.031	−0.004	1.47	−5.06			1.40	−3.91
108	192	−0.200		0.007	−0.001		−0.207		0.008	0.001	0.92	−8.06			0.88	−6.97
109	193	−0.208		0.007	−0.002		−0.215		0.009	0.002	0.65	−8.57			0.62	−7.58
110	194	0.025		−0.007	0.000		0.026		0.009	0.000	0.45	−10.85			0.45	−9.91
111	195	0.067		0.000	0.001		0.071		0.002	−0.001	0.00	−11.19			−0.01	−10.35
112	196	0.000		−0.013	0.000		0.000		0.015	0.000	−0.50	−13.40			−0.50	−12.64
113	197	0.058		0.000	0.002		0.062		0.001	−0.002	−1.10	−13.54			−1.11	−12.87
114	198	0.000		0.013	0.000		0.000		−0.015	0.000	−1.73	−15.53			−1.73	−14.94
115	199	0.000		0.013	0.000		0.000		−0.015	0.000	−2.31	−15.32			−2.31	−14.80
116	200	0.008		0.013	0.000		0.009		−0.015	0.000	−3.15	−17.17			−3.15	−16.73
117	201	0.000		0.013	0.000		0.000		−0.015	0.000	−3.80	−16.70			−3.80	−16.33
118	202	0.008		0.013	0.000		0.009		−0.015	0.000	−4.64	−18.22			−4.64	−17.92
119	203	0.000		0.013	0.000		0.000		−0.015	0.000	−5.43	−17.57	−17.35	0.070	−5.43	−17.34
120	204	0.008		0.013	−0.001		0.009		−0.015	0.001	−6.26	−18.74			−6.26	−18.58
121	205	0.017		0.013	−0.002		0.018		−0.015	0.002	−7.13	−17.86	−17.55	0.030	−7.13	−17.77
122	206	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−8.07	−18.83	−18.20	0.010	−8.07	−18.80
123	207	−0.025		0.013	0.004		−0.026		−0.015	−0.003	−9.01	−17.72	−17.17	0.007	−9.01	−17.74
124	208	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−9.80	−18.23	−17.49	0.004	−9.80	−18.32
125	209	−0.008		0.000	0.000		−0.008		0.000	0.000	−10.70	−16.78	−16.39	0.004	−10.71	−16.93
126	210	0.000		−0.007	0.000		0.000		0.008	0.000	−10.84	−16.33	−15.98	0.004	−10.84	−16.53

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 84$ (Po)																
127	211	−0.008		−0.007	0.003		−0.008		0.008	−0.003	−9.99	−12.84	−12.46	0.004	−9.99	−13.09
128	212	0.000		−0.007	0.000		0.000		0.008	0.000	−8.97	−10.94	−10.39	0.004	−8.97	−11.24
129	213	−0.008		−0.007	−0.008		−0.008		0.008	0.008	−7.72	−6.77	−6.68	0.004	−7.71	−7.12
130	214	−0.008		−0.007	0.000		−0.008		0.008	0.000	−6.57	−4.46	−4.49	0.004	−6.57	−4.85
131	215	0.017	0.072	−0.013	0.000	0.002	0.020	−0.098	0.018	0.004	−5.40	−0.09	−0.54	0.003	−5.34	−0.47
132	216	0.017	0.073	−0.013	0.000	−0.003	0.020	−0.099	0.018	0.004	−4.46	2.29	1.76	0.004	−4.39	1.89
133	217	0.025	0.100	−0.013	0.001	0.001	0.031	−0.136	0.020	0.006	−3.82	6.39			−3.69	6.00
134	218	0.033	0.097	−0.020	0.001	−0.007	0.039	−0.133	0.028	0.007	−3.05	8.88	8.35	0.003	−2.91	8.47
135	219	0.092	0.092	−0.053	0.008	−0.029	0.101	−0.128	0.071	0.005	−2.19	13.47			−1.96	13.11
136	220	0.100	0.090	−0.060	0.010	−0.028	0.110	−0.125	0.080	0.005	−1.41	16.24			−1.13	15.89
137	221	0.117		−0.067	−0.024		0.128		0.089	0.037	−0.86	20.76			−0.54	20.43
138	222	0.125		−0.067	−0.017		0.136		0.090	0.030	−0.26	23.61			0.03	23.22
139	223	0.142		−0.073	−0.009		0.154		0.099	0.025	−0.11	27.99			0.20	27.59
140	224	0.150		−0.067	−0.004		0.162		0.093	0.019	0.29	30.89			0.56	30.43
141	225	0.158		−0.067	0.004		0.170		0.094	0.012	0.28	35.35			0.55	34.87
142	226	0.175		−0.067	0.010		0.189		0.097	0.007	0.63	38.45			0.93	37.98
143	227	0.183		−0.060	0.016		0.197		0.090	0.000	0.58	43.12			0.86	42.60
144	228	0.183		−0.053	0.018		0.197		0.081	−0.004	0.71	46.24			0.97	45.69
145	229	0.192		−0.047	0.024		0.206		0.075	−0.011	0.53	51.00			0.79	50.43
146	230	0.192		−0.040	0.025		0.206		0.067	−0.014	0.69	54.40			0.95	53.81
147	231	0.200		−0.040	0.032		0.215		0.069	−0.020	0.35	59.22			0.67	58.69
148	232	0.200		−0.033	0.031		0.215		0.060	−0.021	0.47	62.81			0.78	62.25
149	233	0.200		−0.027	0.032		0.215		0.053	−0.024	0.18	67.91			0.47	67.32
150	234	0.200		−0.020	0.029		0.216		0.044	−0.022	0.30	71.72			0.57	71.11
151	235	0.208		−0.007	0.030		0.225		0.030	−0.026	−0.02	77.01			0.26	76.40
152	236	0.208		0.000	0.031		0.226		0.021	−0.029	0.18	81.12			0.48	80.53
153	237	0.200		0.000	0.026		0.217		0.019	−0.024	0.19	86.95			0.44	86.30
154	238	0.200		0.007	0.021		0.217		0.010	−0.021	0.49	91.38			0.70	90.70
155	239	0.200		0.013	0.015		0.217		0.003	−0.017	0.45	97.37			0.64	96.66
156	240	0.192		0.020	0.010		0.209		−0.008	−0.013	0.66	101.92			0.83	101.20
157	241	0.183		0.020	0.005		0.199		−0.010	−0.008	0.47	107.96			0.61	107.21
158	242	0.175		0.027	0.002		0.190		−0.019	−0.007	0.52	112.56			0.66	111.82
159	243	0.175		0.033	−0.001		0.190		−0.027	−0.005	0.14	118.61			0.30	117.90
160	244	0.175		0.040	−0.002		0.191		−0.035	−0.005	0.05	123.27			0.24	122.60
161	245	0.183		0.053	−0.005		0.200		−0.050	−0.005	−0.39	129.45			−0.12	128.87
162	246	0.192		0.060	−0.008		0.211		−0.057	−0.004	−0.43	134.37			−0.09	133.87
163	247	0.050		0.000	−0.003		0.053		0.001	0.003	0.53	142.14			0.54	141.33
164	248	0.050		−0.007	−0.003		0.053		0.009	0.003	0.09	146.84			0.10	146.05
165	249	0.050		−0.013	−0.003		0.053		0.017	0.004	−0.34	153.41			−0.32	152.65
166	250	0.050		−0.027	−0.004		0.053		0.033	0.006	−0.58	158.51			−0.50	157.82
167	251	0.050		−0.020	0.000		0.053		0.025	0.001	−1.29	164.98			−1.25	164.27
168	252	0.050		−0.020	0.004		0.053		0.025	−0.003	−1.68	170.12			−1.63	169.44
169	253	0.058		−0.020	0.010		0.062		0.026	−0.008	−2.20	176.96			−2.13	176.32
170	254	0.067		−0.013	0.015		0.071		0.018	−0.014	−2.52	182.35			−2.43	181.76
171	255	0.067		−0.007	0.011		0.071		0.011	−0.010	−3.12	189.27			−3.07	188.67
172	256	−0.092		−0.027	−0.009		−0.095		0.035	0.006	−4.10	194.19			−3.97	193.68
173	257	0.058		0.007	0.001		0.062		−0.007	−0.001	−4.08	201.90			−4.06	201.32
174	258	0.058		0.020	−0.008		0.062		−0.023	0.007	−4.40	207.65			−4.33	207.15
175	259	0.050		0.020	−0.010		0.053		−0.023	0.009	−5.15	214.77			−5.08	214.31
176	260	−0.050		−0.020	−0.012		−0.052		0.025	0.011	−5.63	220.53			−5.54	220.11
177	261	−0.050		−0.013	−0.013		−0.052		0.017	0.012	−6.27	227.92			−6.20	227.52
178	262	−0.050		−0.007	−0.012		−0.052		0.009	0.011	−6.59	234.01			−6.53	233.63
179	263	−0.033		0.000	−0.007		−0.035		0.001	0.007	−7.43	241.36			−7.41	240.98
180	264	−0.017		0.007	−0.001		−0.018		−0.008	0.001	−7.75	247.62			−7.74	247.26
181	265	−0.017		0.007	0.000		−0.018		−0.008	0.000	−8.35	255.37			−8.34	255.05
182	266	−0.008		0.007	0.000		−0.008		−0.008	0.000	−8.45	261.99			−8.45	261.71
183	267	0.000		0.007	0.000		0.000		−0.008	0.000	−8.89	270.07			−8.89	269.83

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 84 (Po)																
184	268	0.000		0.000	−0.001		0.000		0.000	0.001	−8.61	277.24			−8.61	277.04
185	269	0.000		0.007	0.000		0.000		−0.008	0.000	−7.76	286.75			−7.76	286.59
186	270	0.000		0.007	0.000		0.000		−0.008	0.000	−7.06	294.49			−7.06	294.39
187	271	0.000	0.059	0.007	0.000	0.000	0.002	−0.079	−0.007	0.002	−6.13	304.23			−5.96	304.33
188	272	0.000	0.073	0.007	0.000	0.000	0.002	−0.098	−0.006	0.003	−5.26	312.30			−5.00	312.54
189	273	0.000	0.090	0.007	0.000	0.000	0.004	−0.121	−0.005	0.005	−4.88	321.64			−4.49	322.06
190	274	0.000	0.097	0.007	0.000	0.000	0.004	−0.130	−0.004	0.006	−4.23	329.64			−3.77	330.18
191	275	0.000	0.107	0.007	0.000	0.000	0.005	−0.144	−0.004	0.007	−4.06	338.90			−3.49	339.60
192	276	0.400		0.093	−0.007		0.455		−0.041	−0.028	−1.00	349.46			0.41	351.05
193	277	0.400		0.100	−0.014		0.456		−0.050	−0.025	−1.25	358.45			0.20	360.13
194	278	0.392		0.100	−0.020		0.446		−0.055	−0.019	−1.15	366.19			0.31	367.95
195	279	0.383		0.093	−0.021		0.434		−0.050	−0.014	−1.21	375.51			0.14	377.20
Z = 85 (At)																
99	184	0.258		−0.020	0.021		0.280		0.056	−0.011	1.03	22.63			0.90	24.87
100	185	0.283		−0.007	0.019		0.309		0.046	−0.012	0.83	18.32			0.70	20.43
101	186	0.292		0.007	0.020		0.320		0.031	−0.018	0.72	15.97			0.57	17.94
102	187	0.300		0.013	0.016		0.330		0.026	−0.015	0.78	12.34			0.65	14.21
103	188	0.308		0.020	0.012		0.340		0.019	−0.014	0.87	10.59			0.71	12.32
104	189	0.325		0.013	0.007		0.359		0.032	−0.006	1.00	7.44			0.86	9.08
105	190	0.267		0.027	0.002		0.293		−0.002	−0.007	1.15	6.14			1.04	7.70
106	191	−0.217		0.000	−0.002		−0.224		0.018	0.000	1.49	3.59			1.43	5.10
107	192	−0.225		0.007	−0.002		−0.232		0.012	0.002	1.24	2.28			1.16	3.66
108	193	−0.217		0.007	0.001		−0.224		0.010	−0.001	0.99	−0.47			0.94	0.83
109	194	−0.217		0.007	0.001		−0.224		0.010	−0.001	0.73	−1.43			0.67	−0.23
110	195	−0.208		0.007	0.001		−0.215		0.009	−0.001	0.50	−3.78			0.46	−2.66
111	196	−0.200		0.013	0.003		−0.207		0.001	−0.001	0.32	−4.30			0.28	−3.28
112	197	−0.200		0.013	0.003		−0.207		0.001	−0.001	0.01	−6.37			−0.03	−5.43
113	198	−0.200		0.020	0.005		−0.207		−0.007	−0.001	−0.32	−6.69			−0.36	−5.84
114	199	0.075		0.000	0.002		0.080		0.002	−0.002	−0.87	−8.64			−0.87	−7.84
115	200	0.083		0.007	0.000		0.089		−0.006	−0.001	−1.49	−8.90	−8.94	0.690	−1.50	−8.20
116	201	0.067		0.007	0.000		0.071		−0.007	−0.001	−2.14	−10.62	−10.74	0.170	−2.15	−9.99
117	202	0.058		0.007	−0.001		0.062		−0.007	0.001	−2.87	−10.66	−10.76	0.150	−2.88	−10.11
118	203	0.042		0.007	0.000		0.045		−0.008	0.000	−3.59	−12.09	−12.29	0.100	−3.59	−11.62
119	204	−0.050		0.007	−0.002		−0.053		−0.007	0.002	−4.56	−12.06	−11.90	0.080	−4.56	−11.66
120	205	0.033		0.007	−0.001		0.035		−0.008	0.001	−5.07	−12.96	−13.03	0.050	−5.07	−12.64
121	206	−0.050		0.007	−0.002		−0.053		−0.007	0.002	−6.21	−12.77	−12.49	0.070	−6.22	−12.52
122	207	−0.033		0.013	0.000		−0.035		−0.015	0.001	−6.94	−13.58	−13.28	0.040	−6.94	−13.39
123	208	−0.042		0.020	0.004		−0.044		−0.023	−0.003	−7.77	−12.77	−12.56	0.040	−7.77	−12.65
124	209	−0.033		0.013	0.001		−0.035		−0.015	0.000	−8.52	−13.28	−12.90	0.008	−8.52	−13.23
125	210	−0.017		0.007	−0.002		−0.018		−0.008	0.002	−9.44	−12.27	−11.99	0.009	−9.44	−12.28
126	211	0.008		−0.007	0.002		0.008		0.008	−0.002	−9.58	−11.87	−11.67	0.004	−9.58	−11.93
127	212	0.017		−0.013	−0.005		0.018		0.016	0.005	−8.69	−8.75	−8.64	0.005	−8.69	−8.87
128	213	0.008		−0.007	0.001		0.008		0.008	−0.001	−7.76	−6.99	−6.60	0.006	−7.76	−7.16
129	214	0.017		−0.013	0.004		0.018		0.016	−0.004	−6.52	−3.23	−3.40	0.005	−6.52	−3.46
130	215	0.017		−0.013	0.001		0.018		0.016	−0.001	−5.37	−0.96	−1.27	0.007	−5.37	−1.24
131	216	0.033		−0.020	−0.006		0.035		0.024	0.007	−4.26	2.94	2.23	0.005	−4.25	2.63
132	217	0.033	0.101	−0.020	0.001	−0.005	0.039	−0.138	0.028	0.007	−3.72	4.89	4.38	0.008	−3.60	4.64
133	218	0.075	0.109	−0.047	0.006	−0.023	0.085	−0.151	0.063	0.008	−3.21	8.46	8.08	0.012	−3.01	8.24
134	219	0.092	0.105	−0.053	0.008	−0.025	0.103	−0.146	0.072	0.007	−2.41	10.94	10.53	0.080	−2.18	10.72
135	220	0.100	0.102	−0.060	0.010	−0.024	0.111	−0.142	0.081	0.007	−2.07	14.61			−1.82	14.36
136	221	0.100	0.100	−0.060	0.010	−0.023	0.111	−0.139	0.081	0.006	−1.43	17.20			−1.16	16.93
137	222	0.125	0.087	−0.073	0.014	−0.023	0.137	−0.121	0.099	0.005	−0.86	21.35			−0.55	21.09
138	223	0.133	0.073	−0.073	0.014	−0.017	0.145	−0.102	0.100	0.004	−0.29	24.14			0.02	23.85
139	224	0.142		−0.073	−0.010		0.154		0.099	0.026	−0.18	28.09			0.10	27.73
140	225	0.150		−0.073	−0.003		0.163		0.101	0.020	0.16	30.90			0.45	30.51
141	226	0.158		−0.073	0.004		0.171		0.102	0.013	0.13	34.95			0.41	34.53
142	227	0.175		−0.067	0.010		0.189		0.097	0.007	0.44	37.98			0.71	37.53

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 85 (At)																
143	228	0.183		−0.060	0.016		0.197		0.090	0.000	0.39	42.25			0.64	41.76
144	229	0.183		−0.060	0.020		0.197		0.090	−0.004	0.51	45.33			0.78	44.84
145	230	0.192		−0.053	0.026		0.206		0.083	−0.011	0.32	49.71			0.59	49.19
146	231	0.192		−0.047	0.028		0.206		0.075	−0.015	0.48	53.07			0.75	52.54
147	232	0.200		−0.040	0.033		0.215		0.069	−0.021	0.16	57.54			0.46	57.01
148	233	0.200		−0.033	0.031		0.215		0.060	−0.021	0.32	61.14			0.60	60.57
149	234	0.200		−0.033	0.034		0.215		0.060	−0.024	0.02	65.86			0.32	65.30
150	235	0.200		−0.020	0.030		0.216		0.044	−0.023	0.18	69.68			0.44	69.07
151	236	0.208		−0.013	0.032		0.225		0.037	−0.027	−0.13	74.60			0.14	74.00
152	237	0.217		0.000	0.031		0.236		0.023	−0.029	−0.06	78.55			0.22	77.96
153	238	0.200		0.000	0.028		0.217		0.020	−0.026	0.15	84.22			0.40	83.58
154	239	0.200		0.000	0.023		0.217		0.019	−0.021	0.44	88.61			0.65	87.93
155	240	0.192		0.007	0.016		0.208		0.009	−0.016	0.51	94.35			0.67	93.61
156	241	0.183		0.013	0.012		0.198		−0.001	−0.014	0.71	98.86			0.85	98.10
157	242	0.175		0.013	0.006		0.189		−0.002	−0.008	0.54	104.56			0.65	103.77
158	243	0.167		0.020	0.003		0.181		−0.012	−0.006	0.59	109.14			0.70	108.35
159	244	0.167		0.027	0.000		0.181		−0.021	−0.005	0.26	114.87			0.38	114.10
160	245	0.167		0.033	0.000		0.181		−0.028	−0.006	0.18	119.52			0.32	118.78
161	246	0.183		0.047	−0.004		0.200		−0.043	−0.005	−0.21	125.40			0.00	124.74
162	247	0.192		0.060	−0.007		0.211		−0.057	−0.005	−0.27	130.27			0.04	129.71
163	248	0.067		−0.013	−0.001		0.071		0.017	0.002	0.69	137.69			0.72	136.85
164	249	0.058		−0.013	−0.003		0.062		0.017	0.004	0.47	142.60			0.49	141.77
165	250	0.058		−0.020	−0.005		0.062		0.025	0.007	0.06	148.83			0.11	148.04
166	251	0.058		−0.027	−0.003		0.062		0.034	0.005	−0.22	153.87			−0.15	153.12
167	252	0.058		−0.027	0.001		0.062		0.034	0.001	−0.86	160.07			−0.79	159.33
168	253	0.067		−0.020	0.006		0.071		0.026	−0.004	−1.30	165.14			−1.24	164.40
169	254	0.067		−0.020	0.010		0.071		0.026	−0.008	−1.85	171.59			−1.78	170.89
170	255	0.075		−0.013	0.014		0.080		0.018	−0.013	−2.12	177.02			−2.04	176.34
171	256	0.075		−0.007	0.010		0.080		0.011	−0.009	−2.72	183.61			−2.67	182.93
172	257	−0.108		−0.020	−0.014		−0.112		0.028	0.011	−3.91	188.29			−3.78	187.71
173	258	0.067		0.007	0.000		0.071		−0.007	−0.001	−3.62	195.95			−3.60	195.28
174	259	0.058		0.020	−0.007		0.062		−0.023	0.006	−3.94	201.68			−3.88	201.07
175	260	0.058		0.020	−0.012		0.062		−0.023	0.011	−4.61	208.53			−4.53	207.98
176	261	−0.058		−0.007	−0.011		−0.061		0.010	0.010	−5.14	214.22			−5.09	213.67
177	262	−0.058		0.000	−0.009		−0.061		0.002	0.009	−5.74	221.32			−5.71	220.78
178	263	−0.050		0.000	−0.014		−0.052		0.001	0.014	−6.05	227.40			−5.99	226.92
179	264	−0.050		0.007	−0.009		−0.053		−0.007	0.009	−6.71	234.61			−6.67	234.14
180	265	−0.033		0.013	−0.002		−0.035		−0.015	0.002	−6.99	240.89			−6.97	240.43
181	266	−0.025		0.013	0.001		−0.026		−0.015	−0.001	−7.59	248.31			−7.57	247.88
182	267	−0.017		0.013	0.001		−0.018		−0.015	−0.001	−7.66	254.96			−7.64	254.57
183	268	0.000		0.007	0.000		0.000		−0.008	0.000	−8.10	262.70			−8.10	262.33
184	269	0.000		0.007	0.000		0.000		−0.008	0.000	−7.79	269.90			−7.78	269.57
185	270	0.000		0.013	0.000		0.000		−0.015	0.000	−6.94	279.08			−6.92	278.80
186	271	0.000		0.007	0.000		0.000		−0.008	0.000	−6.28	286.78			−6.27	286.53
187	272	0.000	0.057	0.013	0.000	0.000	0.001	−0.076	−0.014	0.002	−5.26	296.28			−5.10	296.23
188	273	0.000	0.074	0.013	0.000	0.000	0.002	−0.099	−0.013	0.003	−4.42	304.32			−4.16	304.41
189	274	0.000	0.092	0.020	0.000	0.000	0.004	−0.123	−0.020	0.005	−3.92	313.44			−3.50	313.73
190	275	0.000	0.100	0.013	0.000	0.000	0.004	−0.134	−0.011	0.006	−3.41	321.30			−2.93	321.70
191	276	0.400		0.093	−0.005		0.455		−0.040	−0.029	−1.33	332.15			−0.01	333.44
192	277	0.400		0.100	−0.009		0.456		−0.049	−0.029	−1.19	339.79			0.25	341.24
193	278	0.400		0.100	−0.013		0.456		−0.050	−0.026	−1.41	348.48			−0.02	349.94
194	279	0.400		0.107	−0.021		0.457		−0.060	−0.022	−1.31	356.23			0.20	357.85
195	280	0.392		0.107	−0.025		0.447		−0.064	−0.018	−1.59	365.01			−0.09	366.66
196	281	0.383		0.100	−0.027		0.435		−0.060	−0.012	−1.31	373.06			0.12	374.71
197	282	0.383		0.107	−0.029		0.436		−0.069	−0.013	−1.54	382.03			−0.01	383.83
Z = 86 (Rn)																
100	186	0.283		−0.007	0.020		0.309		0.046	−0.013	0.59	25.91			0.46	28.33

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 86 (Rn)																
101	187	0.292		0.000	0.022		0.320		0.040	−0.017	0.47	23.49			0.32	25.76
102	188	0.292		0.007	0.019		0.320		0.031	−0.017	0.56	19.43			0.43	21.59
103	189	0.292		0.013	0.016		0.321		0.024	−0.016	0.59	17.57			0.45	19.60
104	190	0.317		0.013	0.009		0.349		0.030	−0.008	0.80	14.04			0.67	15.96
105	191	0.267		0.020	0.006		0.293		0.007	−0.009	1.05	12.79			0.95	14.62
106	192	0.258		0.027	0.000		0.283		−0.004	−0.006	1.29	9.69			1.21	11.43
107	193	0.250		0.040	−0.002		0.275		−0.022	−0.008	1.42	8.70			1.34	10.32
108	194	−0.233		0.007	−0.004		−0.240		0.013	0.003	1.42	5.75			1.36	7.29
109	195	−0.233		0.007	−0.004		−0.240		0.013	0.003	1.16	4.74			1.10	6.17
110	196	−0.225		0.007	−0.002		−0.232		0.012	0.002	0.92	1.93			0.87	3.27
111	197	−0.225		0.007	−0.002		−0.232		0.012	0.002	0.65	1.27			0.60	2.52
112	198	−0.208		0.013	0.002		−0.215		0.002	0.000	0.45	−1.13			0.42	0.03
113	199	−0.200		0.013	0.003		−0.207		0.001	−0.001	0.09	−1.53			0.06	−0.46
114	200	−0.200		0.020	0.004		−0.207		−0.007	0.000	−0.19	−3.66			−0.22	−2.67
115	201	−0.192		0.027	0.006		−0.199		−0.016	−0.001	−0.67	−3.82			−0.69	−2.93
116	202	−0.100		0.000	−0.004		−0.104		0.004	0.004	−1.45	−6.10			−1.45	−5.27
117	203	−0.100		0.000	−0.004		−0.104		0.004	0.004	−2.13	−6.14			−2.13	−5.39
118	204	−0.083		0.000	−0.004		−0.087		0.003	0.004	−2.90	−8.06			−2.90	−7.40
119	205	−0.075		0.000	−0.003		−0.079		0.002	0.003	−3.72	−7.92			−3.72	−7.33
120	206	−0.042		0.007	0.001		−0.044		−0.007	−0.001	−4.26	−9.28			−4.26	−8.77
121	207	−0.050		0.007	0.001		−0.053		−0.007	−0.001	−5.19	−8.93	−8.67	0.070	−5.20	−8.50
122	208	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−5.83	−10.06			−5.83	−9.70
123	209	−0.042		0.013	0.005		−0.044		−0.015	−0.004	−6.66	−9.30	−8.97	0.029	−6.66	−9.01
124	210	−0.025		0.007	0.002		−0.026		−0.008	−0.002	−7.45	−10.27	−9.62	0.010	−7.45	−10.06
125	211	−0.008		0.000	0.000		−0.008		0.000	0.000	−8.35	−9.28	−8.78	0.007	−8.35	−9.13
126	212	0.000		−0.007	0.000		0.000		0.008	0.000	−8.46	−9.26	−8.68	0.005	−8.46	−9.18
127	213	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−7.55	−6.17	−5.72	0.007	−7.56	−6.15
128	214	0.008		−0.007	0.000		0.008		0.008	0.000	−6.58	−4.77	−4.34	0.010	−6.58	−4.81
129	215	0.017	0.039	−0.013	0.000	0.001	0.019	−0.053	0.016	0.001	−5.32	−1.04	−1.19	0.008	−5.30	−1.12
130	216	0.008		−0.007	−0.001		0.008		0.008	0.001	−4.30	0.70	0.23	0.008	−4.30	0.55
131	217	0.033	0.098	−0.020	0.001	−0.008	0.039	−0.134	0.028	0.007	−3.61	4.14	3.63	0.005	−3.51	4.04
132	218	0.033	0.102	−0.020	0.001	−0.006	0.040	−0.140	0.029	0.007	−2.84	5.92	5.20	0.004	−2.71	5.79
133	219	0.092	0.110	−0.053	0.008	−0.029	0.103	−0.153	0.072	0.008	−2.58	9.20	8.83	0.003	−2.35	9.12
134	220	0.100	0.105	−0.060	0.010	−0.025	0.111	−0.146	0.081	0.007	−1.98	11.07	10.59	0.004	−1.72	10.99
135	221	0.108	0.102	−0.067	0.012	−0.028	0.119	−0.142	0.090	0.006	−1.75	14.60			−1.46	14.49
136	222	0.125	0.095	−0.073	0.014	−0.022	0.137	−0.132	0.100	0.006	−0.98	16.93	16.37	0.003	−0.65	16.82
137	223	0.142	0.084	−0.080	0.015	−0.019	0.155	−0.117	0.110	0.007	−0.52	20.93			−0.18	20.80
138	224	0.150	0.073	−0.080	0.015	−0.010	0.163	−0.102	0.111	0.007	−0.04	23.23			0.32	23.07
139	225	0.150	0.055	−0.080	0.015	−0.006	0.163	−0.077	0.110	0.005	0.01	27.08			0.33	26.85
140	226	0.158		−0.073	−0.001		0.171		0.102	0.019	0.32	29.47			0.60	29.17
141	227	0.167		−0.073	0.006		0.180		0.103	0.012	0.22	33.43			0.50	33.09
142	228	0.183		−0.067	0.013		0.197		0.098	0.005	0.46	36.00			0.74	35.63
143	229	0.183		−0.067	0.018		0.197		0.099	0.000	0.32	40.16			0.61	39.76
144	230	0.192		−0.060	0.023		0.206		0.092	−0.006	0.46	42.87			0.75	42.45
145	231	0.200		−0.053	0.028		0.215		0.085	−0.013	0.22	47.17			0.51	46.72
146	232	0.200		−0.047	0.030		0.215		0.077	−0.016	0.38	50.15			0.68	49.68
147	233	0.200		−0.047	0.035		0.215		0.078	−0.021	0.08	54.60			0.41	54.15
148	234	0.200		−0.040	0.033		0.215		0.069	−0.021	0.24	57.82			0.55	57.33
149	235	0.200		−0.033	0.034		0.215		0.060	−0.024	−0.01	62.56			0.29	62.04
150	236	0.200		−0.027	0.032		0.215		0.053	−0.024	0.14	66.00			0.43	65.46
151	237	0.208		−0.013	0.033		0.225		0.037	−0.028	−0.16	70.92			0.13	70.35
152	238	0.217		0.000	0.032		0.236		0.023	−0.030	−0.07	74.51			0.23	73.96
153	239	0.200		0.000	0.028		0.217		0.020	−0.026	0.21	80.22			0.45	79.58
154	240	0.200		0.000	0.023		0.217		0.019	−0.021	0.49	84.24			0.70	83.57
155	241	0.200		0.007	0.018		0.217		0.010	−0.018	0.52	89.91			0.70	89.19
156	242	0.192		0.013	0.013		0.208		0.001	−0.015	0.81	94.15			0.97	93.41
157	243	0.183		0.020	0.007		0.199		−0.009	−0.010	0.70	99.88			0.83	99.11

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 86 (Rn)																
158	244	0.175		0.020	0.004		0.190		−0.011	−0.007	0.80	104.15			0.92	103.36
159	245	0.175		0.033	0.001		0.190		−0.027	−0.007	0.49	109.88			0.63	109.12
160	246	0.183		0.040	−0.001		0.200		−0.034	−0.007	0.43	114.19			0.61	113.47
161	247	0.183		0.047	−0.003		0.200		−0.043	−0.006	0.03	120.04			0.24	119.35
162	248	0.192		0.060	−0.006		0.211		−0.057	−0.006	0.00	124.59			0.31	124.00
163	249	0.175		0.060	−0.008		0.192		−0.060	−0.003	−0.28	130.74			0.02	130.15
164	250	0.067		−0.013	0.000		0.071		0.017	0.001	0.97	136.77			1.00	135.91
165	251	0.058		−0.020	−0.003		0.062		0.025	0.005	0.76	143.18			0.81	142.35
166	252	0.058		−0.027	−0.001		0.062		0.034	0.003	0.47	147.86			0.54	147.06
167	253	0.067		−0.027	0.005		0.071		0.034	−0.003	−0.27	153.93			−0.19	153.15
168	254	0.067		−0.020	0.009		0.071		0.026	−0.007	−0.64	158.73			−0.57	157.94
169	255	0.075		−0.013	0.012		0.080		0.018	−0.011	−1.22	165.13			−1.15	164.37
170	256	0.075		−0.013	0.017		0.080		0.018	−0.016	−1.48	170.23			−1.38	169.51
171	257	0.075		−0.007	0.012		0.080		0.011	−0.011	−2.06	176.82			−2.00	176.08
172	258	−0.117		−0.020	−0.013		−0.121		0.029	0.010	−3.25	181.16			−3.11	180.51
173	259	0.067		0.007	0.001		0.071		−0.006	−0.001	−2.89	188.87			−2.87	188.13
174	260	0.067		0.020	−0.008		0.072		−0.022	0.006	−3.15	194.31			−3.09	193.63
175	261	0.058		0.020	−0.012		0.062		−0.023	0.011	−3.81	201.16			−3.73	200.53
176	262	−0.067		0.000	−0.008		−0.070		0.002	0.008	−4.50	206.37			−4.46	205.71
177	263	−0.067		0.007	−0.006		−0.070		−0.006	0.006	−5.11	213.44			−5.07	212.81
178	264	−0.050		0.000	−0.013		−0.052		0.001	0.013	−5.20	219.40			−5.14	218.82
179	265	−0.042		0.007	−0.007		−0.044		−0.007	0.007	−5.87	226.59			−5.84	226.00
180	266	−0.025		0.013	0.000		−0.026		−0.015	0.000	−6.08	232.60			−6.06	232.04
181	267	−0.025		0.013	0.003		−0.026		−0.015	−0.002	−6.60	240.09			−6.58	239.55
182	268	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−6.63	246.45			−6.61	245.95
183	269	0.000		0.007	0.000		0.000		−0.008	0.000	−7.06	254.19			−7.06	253.70
184	270	0.000		0.007	0.000		0.000		−0.008	0.000	−6.73	261.08			−6.73	260.62
185	271	0.000		0.013	0.000		0.000		−0.015	0.000	−5.87	270.26			−5.86	269.85
186	272	0.000		0.007	0.000		0.000		−0.008	0.000	−5.23	277.61			−5.23	277.23
187	273	0.000	0.058	0.013	0.000	0.000	0.002	−0.077	−0.014	0.002	−4.27	287.05			−4.11	286.87
188	274	0.000	0.077	0.007	0.000	0.000	0.003	−0.103	−0.006	0.004	−3.54	294.65			−3.27	294.61
189	275	0.000	0.094	0.013	0.000	0.000	0.004	−0.126	−0.012	0.006	−3.13	303.68			−2.72	303.82
190	276	0.000	0.103	0.013	0.000	0.000	0.005	−0.138	−0.011	0.007	−2.55	311.29			−2.05	311.56
191	277	0.400		0.100	−0.008		0.456		−0.049	−0.030	−1.26	321.35			0.13	322.55
192	278	0.400		0.107	−0.010		0.457		−0.058	−0.032	−1.11	328.68			0.43	330.07
193	279	0.400		0.107	−0.015		0.457		−0.059	−0.027	−1.37	337.33			0.12	338.72
194	280	0.392		0.107	−0.020		0.447		−0.063	−0.022	−1.26	344.75			0.24	346.21
195	281	0.383		0.100	−0.021		0.435		−0.058	−0.017	−1.39	353.67			−0.01	355.05
196	282	0.375		0.100	−0.026		0.425		−0.062	−0.012	−1.17	361.37			0.25	362.83
197	283	0.375		0.100	−0.025		0.425		−0.062	−0.013	−1.35	370.38			0.06	371.88
198	284	0.392		0.120	−0.033		0.448		−0.081	−0.016	−1.52	377.82			0.30	379.78
199	285	0.400		0.127	−0.036		0.459		−0.087	−0.018	−1.69	386.97			0.27	389.13
200	286	0.400		0.133	−0.038		0.460		−0.095	−0.019	−1.57	394.85			0.57	397.24
Z = 87 (Fr)																
102	189	0.300		0.000	0.021		0.329		0.042	−0.015	0.19	28.99			0.02	31.41
103	190	0.308		0.013	0.015		0.339		0.028	−0.014	0.26	26.71			0.07	28.98
104	191	0.317		0.007	0.013		0.349		0.038	−0.009	0.44	23.09			0.27	25.26
105	192	0.308		0.013	0.007		0.339		0.027	−0.006	0.53	21.23			0.36	23.28
106	193	0.325		0.013	0.003		0.359		0.031	−0.002	0.81	18.12			0.65	20.05
107	194	0.258		0.033	−0.002		0.283		−0.011	−0.005	1.16	16.90			1.04	18.76
108	195	0.325		0.020	−0.006		0.359		0.021	0.004	1.19	13.92			1.05	15.65
109	196	−0.250		0.007	−0.007		−0.257		0.017	0.006	1.47	13.01			1.37	14.67
110	197	−0.242		0.013	−0.003		−0.249		0.008	0.004	1.24	10.15			1.16	11.72
111	198	−0.242		0.007	−0.005		−0.249		0.015	0.004	0.95	9.04			0.87	10.50
112	199	−0.225		0.013	−0.001		−0.232		0.005	0.002	0.69	6.52			0.63	7.90
113	200	−0.217		0.020	0.000		−0.224		−0.004	0.003	0.41	5.77			0.35	7.05
114	201	−0.208		0.020	0.002		−0.215		−0.006	0.001	0.08	3.55			0.03	4.74

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 87 (Fr)																
115	202	−0.200		0.027	0.004		−0.207		−0.015	0.001	−0.33	3.02			−0.37	4.12
116	203	−0.183		0.027	0.002		−0.190		−0.018	0.003	−0.80	1.00			−0.83	2.02
117	204	−0.183		0.033	0.006		−0.190		−0.024	0.000	−1.35	0.67	0.65	0.690	−1.38	1.60
118	205	−0.108		0.000	−0.006		−0.113		0.005	0.006	−2.27	−1.45	−1.26	0.160	−2.28	−0.59
119	206	−0.108		0.000	−0.006		−0.113		0.005	0.006	−3.05	−1.69	−1.41	0.150	−3.06	−0.91
120	207	−0.100		0.000	−0.007		−0.104		0.004	0.007	−3.66	−3.18	−2.96	0.090	−3.67	−2.48
121	208	−0.083		0.000	−0.003		−0.087		0.003	0.003	−4.31	−2.96	−2.70	0.070	−4.32	−2.34
122	209	−0.042		0.013	0.005		−0.044		−0.015	−0.004	−4.90	−4.09	−3.83	0.050	−4.90	−3.55
123	210	−0.050		0.020	0.009		−0.052		−0.022	−0.007	−5.65	−3.67	−3.40	0.050	−5.65	−3.20
124	211	−0.033		0.013	0.006		−0.035		−0.015	−0.005	−6.39	−4.64	−4.20	0.040	−6.39	−4.24
125	212	−0.008		−0.007	−0.001		−0.008		0.008	0.001	−7.26	−4.03	−3.60	0.040	−7.27	−3.71
126	213	0.008		−0.007	0.002		0.008		0.008	−0.002	−7.33	−4.01	−3.57	0.008	−7.33	−3.76
127	214	0.017		−0.013	−0.005		0.018		0.016	0.005	−6.45	−1.35	−0.98	0.010	−6.44	−1.17
128	215	0.008		−0.007	0.001		0.008		0.008	−0.001	−5.54	−0.07	0.29	0.008	−5.55	0.05
129	216	0.017	0.054	−0.013	0.000	0.005	0.019	−0.073	0.017	0.002	−4.31	3.24	2.96	0.013	−4.29	3.31
130	217	0.017		−0.007	0.002		0.018		0.008	−0.002	−3.22	5.00	4.29	0.007	−3.23	4.99
131	218	0.042	0.112	−0.020	0.002	−0.005	0.050	−0.154	0.029	0.008	−3.12	7.45	7.04	0.006	−3.00	7.50
132	219	0.083	0.107	−0.053	0.008	−0.028	0.093	−0.149	0.071	0.007	−2.69	8.84	8.61	0.008	−2.51	8.91
133	220	0.100	0.105	−0.067	0.012	−0.027	0.111	−0.146	0.090	0.006	−2.44	11.72	11.46	0.005	−2.22	11.77
134	221	0.108	0.110	−0.067	0.012	−0.025	0.120	−0.153	0.091	0.008	−2.00	13.40	13.27	0.008	−1.74	13.44
135	222	0.125	0.105	−0.080	0.015	−0.026	0.138	−0.147	0.109	0.008	−1.57	16.73	16.38	0.040	−1.26	16.76
136	223	0.133	0.097	−0.080	0.015	−0.021	0.146	−0.135	0.109	0.008	−1.02	18.80	18.38	0.003	−0.69	18.80
137	224	0.150	0.090	−0.080	0.015	−0.017	0.164	−0.125	0.111	0.009	−0.70	22.28	21.63	0.050	−0.37	22.23
138	225	0.150	0.078	−0.080	0.015	−0.011	0.163	−0.108	0.111	0.007	−0.35	24.41	23.85	0.010	−0.02	24.32
139	226	0.158	0.062	−0.080	0.016	−0.005	0.171	−0.086	0.112	0.005	−0.25	27.92	27.30	0.080	0.05	27.76
140	227	0.167	0.053	−0.073	0.015	0.001	0.181	−0.073	0.104	0.005	0.06	30.28	29.59	0.090	0.35	30.07
141	228	0.175	0.031	−0.073	0.016	0.007	0.189	−0.043	0.105	0.003	0.01	33.90			0.28	33.63
142	229	0.183		−0.073	0.014		0.197		0.106	0.006	0.19	36.37			0.47	36.08
143	230	0.192		−0.067	0.021		0.207		0.100	−0.002	0.04	40.14			0.31	39.80
144	231	0.192		−0.060	0.022		0.206		0.092	−0.005	0.18	42.82			0.44	42.44
145	232	0.200		−0.053	0.028		0.215		0.085	−0.013	−0.05	46.74			0.21	46.33
146	233	0.200		−0.053	0.031		0.215		0.085	−0.016	0.09	49.67			0.39	49.28
147	234	0.200		−0.047	0.035		0.215		0.078	−0.021	−0.17	53.79			0.13	53.37
148	235	0.200		−0.040	0.033		0.215		0.069	−0.021	0.01	57.01			0.29	56.54
149	236	0.200		−0.040	0.036		0.215		0.069	−0.024	−0.25	61.36			0.05	60.89
150	237	0.200		−0.027	0.032		0.215		0.053	−0.024	−0.05	64.82			0.22	64.30
151	238	0.208		−0.020	0.034		0.225		0.046	−0.027	−0.36	69.35			−0.08	68.82
152	239	0.217		−0.007	0.034		0.235		0.032	−0.030	−0.29	72.91			0.00	72.37
153	240	0.208		−0.007	0.029		0.225		0.030	−0.025	−0.08	78.18			0.16	77.57
154	241	0.200		0.000	0.024		0.217		0.019	−0.022	0.39	82.36			0.59	81.70
155	242	0.200		0.007	0.018		0.217		0.010	−0.018	0.46	87.70			0.62	86.99
156	243	0.192		0.007	0.014		0.208		0.008	−0.014	0.75	91.91			0.89	91.17
157	244	0.183		0.013	0.007		0.198		−0.001	−0.009	0.70	97.35			0.81	96.56
158	245	0.175		0.020	0.006		0.190		−0.011	−0.009	0.85	101.64			0.96	100.86
159	246	0.175		0.027	0.003		0.190		−0.019	−0.008	0.52	107.00			0.64	106.21
160	247	0.175		0.033	0.002		0.190		−0.027	−0.008	0.49	111.31			0.63	110.55
161	248	0.183		0.047	−0.002		0.200		−0.043	−0.007	0.10	116.81			0.30	116.10
162	249	0.192		0.060	−0.006		0.211		−0.057	−0.006	0.11	121.38			0.40	120.75
163	250	0.175		0.060	−0.007		0.192		−0.060	−0.004	−0.17	127.18			0.11	126.55
164	251	0.075		−0.013	0.004		0.080		0.018	−0.003	1.23	133.34			1.27	132.46
165	252	0.067		−0.013	0.001		0.071		0.017	0.000	0.93	139.31			0.96	138.43
166	253	0.067		−0.020	0.005		0.071		0.026	−0.003	0.67	144.00			0.72	143.15
167	254	0.067		−0.020	0.007		0.071		0.026	−0.005	0.07	149.87			0.12	149.03
168	255	0.075		−0.013	0.012		0.080		0.018	−0.011	−0.36	154.58			−0.30	153.75
169	256	0.075		−0.013	0.016		0.080		0.018	−0.015	−0.89	160.69			−0.81	159.90
170	257	0.083		−0.007	0.019		0.088		0.012	−0.018	−1.20	165.72			−1.08	164.97
171	258	0.083		0.000	0.014		0.089		0.003	−0.014	−1.77	171.97			−1.70	171.19

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 87$ (Fr)																
172	259	−0.117		−0.027	−0.013		−0.121		0.037	0.009	−2.85	176.41			−2.70	175.72
173	260	0.075		0.013	0.001		0.080		−0.013	−0.002	−2.52	183.75			−2.48	182.96
174	261	0.075		0.020	−0.006		0.080		−0.022	0.004	−2.68	189.28			−2.62	188.53
175	262	0.067		0.027	−0.014		0.072		−0.031	0.012	−3.39	195.75			−3.27	195.07
176	263	−0.075		0.007	−0.004		−0.079		−0.006	0.004	−4.10	200.91			−4.07	200.17
177	264	−0.075		0.007	−0.005		−0.079		−0.006	0.005	−4.67	207.69			−4.64	206.97
178	265	−0.058		0.007	−0.012		−0.061		−0.007	0.012	−4.63	213.77			−4.58	213.10
179	266	−0.050		0.013	−0.005		−0.053		−0.014	0.006	−5.26	220.65			−5.23	219.98
180	267	−0.033		0.013	0.001		−0.035		−0.015	0.000	−5.41	226.72			−5.40	226.06
181	268	−0.025		0.020	0.005		−0.026		−0.023	−0.004	−5.99	233.82			−5.95	233.21
182	269	−0.017		0.020	0.005		−0.018		−0.023	−0.004	−5.98	240.21			−5.94	239.63
183	270	0.000		0.007	0.000		0.000		−0.008	0.000	−6.42	247.62			−6.41	247.02
184	271	0.000		0.007	0.000		0.000		−0.008	0.000	−6.07	254.51			−6.06	253.95
185	272	0.000		0.013	0.000		0.000		−0.015	0.000	−5.20	263.37			−5.19	262.85
186	273	0.000		0.007	0.000		0.000		−0.008	0.000	−4.57	270.71			−4.57	270.21
187	274	0.000	0.059	0.013	0.000	0.000	0.002	−0.079	−0.014	0.002	−3.56	279.88			−3.40	279.56
188	275	0.000	0.078	0.013	0.000	0.000	0.003	−0.104	−0.013	0.004	−2.79	287.50			−2.53	287.33
189	276	0.400		0.093	−0.001		0.456		−0.039	−0.033	−1.45	297.14			−0.18	298.01
190	277	0.400		0.093	−0.004		0.455		−0.040	−0.030	−1.27	304.34			0.01	305.26
191	278	0.400		0.100	−0.008		0.456		−0.049	−0.030	−1.41	312.65			−0.09	313.65
192	279	0.400		0.107	−0.011		0.457		−0.058	−0.031	−1.27	319.95			0.18	321.12
193	280	0.400		0.107	−0.016		0.457		−0.059	−0.026	−1.53	328.30			−0.11	329.47
194	281	0.392		0.107	−0.020		0.447		−0.063	−0.022	−1.44	335.70			−0.01	336.93
195	282	0.375		0.093	−0.018		0.425		−0.052	−0.017	−1.44	344.44			−0.22	345.50
196	283	0.375		0.100	−0.025		0.425		−0.062	−0.013	−1.35	352.00			0.01	353.24
197	284	0.358		0.087	−0.018		0.404		−0.051	−0.013	−1.12	361.10			0.03	362.18
198	285	0.350		0.080	−0.013		0.394		−0.044	−0.014	−0.65	369.18			0.44	370.24
199	286	0.400		0.133	−0.039		0.460		−0.095	−0.018	−1.89	376.95			0.12	378.99
200	287	0.400		0.133	−0.039		0.460		−0.095	−0.018	−1.72	384.87			0.34	387.01
201	288	0.300		0.040	0.006		0.332		−0.008	−0.016	−0.04	395.70			0.66	396.52
202	289	0.292		0.033	0.010		0.322		−0.001	−0.017	0.11	403.74			0.81	404.60
$Z = 88$ (Ra)																
104	192	0.308		0.013	0.013		0.339		0.028	−0.012	0.35	30.70			0.19	33.18
105	193	0.275		0.013	0.009		0.301		0.018	−0.009	0.59	28.93			0.45	31.31
106	194	0.267		0.020	0.003		0.293		0.007	−0.006	0.88	25.37			0.77	27.65
107	195	0.250		0.033	0.002		0.274		−0.013	−0.009	1.14	24.02			1.04	26.18
108	196	0.258		0.033	−0.002		0.283		−0.011	−0.005	1.27	20.70			1.18	22.75
109	197	0.292		0.027	−0.012		0.322		0.003	0.006	1.27	19.44			1.14	21.35
110	198	−0.242		0.007	−0.004		−0.249		0.015	0.003	1.65	16.76			1.57	18.60
111	199	−0.233		0.007	−0.004		−0.240		0.013	0.003	1.37	15.60			1.30	17.33
112	200	−0.225		0.013	0.000		−0.232		0.005	0.001	1.22	12.76			1.16	14.39
113	201	−0.217		0.013	0.002		−0.224		0.003	0.000	0.89	11.91			0.83	13.44
114	202	−0.208		0.020	0.002		−0.215		−0.006	0.001	0.65	9.34			0.61	10.78
115	203	−0.200		0.027	0.004		−0.207		−0.015	0.001	0.25	8.77			0.21	10.11
116	204	−0.192		0.027	0.003		−0.199		−0.016	0.002	−0.23	6.31			−0.26	7.57
117	205	−0.183		0.033	0.003		−0.190		−0.024	0.003	−0.78	5.93			−0.81	7.09
118	206	−0.125		0.007	−0.007		−0.130		−0.002	0.007	−1.61	3.47			−1.62	4.55
119	207	−0.125		0.007	−0.007		−0.130		−0.002	0.007	−2.31	3.26			−2.32	4.25
120	208	−0.100		0.000	−0.009		−0.104		0.004	0.008	−2.90	1.38			−2.91	2.29
121	209	−0.083		0.007	−0.004		−0.087		−0.005	0.004	−3.51	1.59			−3.51	2.41
122	210	−0.050		0.007	0.002		−0.053		−0.007	−0.002	−3.98	0.15			−3.99	0.89
123	211	−0.050		0.013	0.004		−0.053		−0.014	−0.003	−4.74	0.53	0.80	0.070	−4.74	1.19
124	212	−0.033		0.013	0.004		−0.035		−0.015	−0.003	−5.44	−0.81			−5.44	−0.23
125	213	−0.017		0.007	0.000		−0.018		−0.008	0.000	−6.24	−0.17	0.31	0.030	−6.24	0.33
126	214	0.008		−0.007	0.000		0.008		0.008	0.000	−6.35	−0.62	0.08	0.011	−6.36	−0.19
127	215	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−5.53	1.93	2.51	0.008	−5.53	2.29
128	216	0.008		−0.007	−0.001		0.008		0.008	0.001	−4.59	2.85	3.27	0.009	−4.59	3.14

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 88$ (Ra)																
129	217	0.025	0.065	−0.013	0.001	0.000	0.028	−0.088	0.017	0.002	−3.42	6.05	5.86	0.010	−3.39	6.30
130	218	0.017	0.063	−0.007	0.000	−0.002	0.020	−0.085	0.010	0.003	−2.37	7.36	6.63	0.012	−2.34	7.55
131	219	0.067	0.112	−0.040	0.005	−0.025	0.077	−0.155	0.055	0.008	−2.69	9.36	9.36	0.012	−2.55	9.59
132	220	0.092	0.103	−0.053	0.008	−0.024	0.103	−0.144	0.072	0.007	−2.13	10.48	10.25	0.011	−1.95	10.69
133	221	0.100	0.104	−0.060	0.010	−0.026	0.111	−0.145	0.081	0.007	−2.07	13.13	12.94	0.007	−1.86	13.30
134	222	0.117	0.106	−0.067	0.012	−0.022	0.130	−0.148	0.092	0.008	−1.70	14.34	14.30	0.005	−1.44	14.51
135	223	0.142	0.102	−0.080	0.015	−0.021	0.156	−0.142	0.111	0.010	−1.16	17.74	17.23	0.003	−0.85	17.91
136	224	0.150	0.094	−0.080	0.015	−0.018	0.164	−0.131	0.112	0.010	−0.64	19.38	18.80	0.004	−0.31	19.52
137	225	0.150	0.089	−0.080	0.015	−0.016	0.164	−0.124	0.112	0.009	−0.68	22.47	21.99	0.003	−0.35	22.54
138	226	0.158	0.078	−0.080	0.016	−0.008	0.172	−0.108	0.112	0.007	−0.30	24.24	23.66	0.003	0.03	24.27
139	227	0.167	0.061	−0.080	0.016	−0.002	0.181	−0.085	0.113	0.006	−0.23	27.68	27.17	0.003	0.07	27.65
140	228	0.167	0.042	−0.080	0.016	0.003	0.180	−0.058	0.113	0.005	0.05	29.62	28.94	0.004	0.36	29.54
141	229	0.175	0.018	−0.080	0.017	0.009	0.189	−0.025	0.114	0.004	−0.09	33.12	32.66	0.110	0.21	32.98
142	230	0.183		−0.073	0.014		0.197		0.106	0.006	0.03	35.15			0.31	34.96
143	231	0.192		−0.067	0.021		0.207		0.100	−0.002	−0.14	38.86			0.13	38.62
144	232	0.200		−0.060	0.025		0.215		0.093	−0.008	−0.03	41.14			0.25	40.86
145	233	0.200		−0.060	0.030		0.215		0.093	−0.013	−0.26	45.02			0.03	44.73
146	234	0.200		−0.053	0.032		0.215		0.085	−0.017	−0.07	47.63			0.23	47.30
147	235	0.208		−0.047	0.037		0.224		0.079	−0.023	−0.42	51.63			−0.11	51.29
148	236	0.208		−0.040	0.035		0.224		0.070	−0.023	−0.25	54.46			0.06	54.08
149	237	0.208		−0.040	0.036		0.224		0.071	−0.024	−0.51	58.78			−0.20	58.38
150	238	0.208		−0.027	0.033		0.224		0.054	−0.024	−0.30	61.88			−0.02	61.42
151	239	0.208		−0.020	0.034		0.225		0.046	−0.027	−0.48	66.51			−0.20	66.03
152	240	0.217		−0.007	0.035		0.235		0.032	−0.031	−0.40	69.71			−0.10	69.23
153	241	0.208		−0.007	0.030		0.225		0.030	−0.026	−0.16	74.98			0.08	74.42
154	242	0.200		0.000	0.025		0.217		0.019	−0.023	0.36	78.85			0.57	78.23
155	243	0.200		0.007	0.019		0.217		0.010	−0.019	0.45	84.18			0.62	83.51
156	244	0.200		0.007	0.016		0.217		0.010	−0.016	0.69	87.99			0.86	87.30
157	245	0.192		0.013	0.010		0.208		0.001	−0.012	0.66	93.41			0.79	92.67
158	246	0.183		0.020	0.006		0.199		−0.009	−0.009	0.88	97.41			1.00	96.65
159	247	0.183		0.027	0.002		0.199		−0.018	−0.007	0.58	102.78			0.71	102.02
160	248	0.183		0.040	0.001		0.200		−0.034	−0.009	0.60	106.79			0.77	106.07
161	249	0.192		0.047	−0.003		0.210		−0.041	−0.007	0.23	112.29			0.44	111.59
162	250	0.192		0.053	−0.004		0.210		−0.049	−0.007	0.23	116.49			0.48	115.82
163	251	0.183		0.060	−0.009		0.201		−0.059	−0.003	0.03	122.34			0.31	121.71
164	252	0.167		0.060	−0.011		0.183		−0.061	0.000	0.28	126.99			0.56	126.36
165	253	0.075		−0.013	0.002		0.080		0.018	−0.001	1.29	134.26			1.33	133.38
166	254	0.067		−0.020	0.004		0.071		0.026	−0.002	1.21	138.77			1.25	137.90
167	255	0.075		−0.020	0.007		0.080		0.027	−0.005	0.50	144.51			0.56	143.65
168	256	0.075		−0.013	0.012		0.080		0.018	−0.011	0.17	148.98			0.23	148.12
169	257	0.083		−0.013	0.016		0.088		0.019	−0.015	−0.46	154.98			−0.37	154.16
170	258	0.083		−0.007	0.019		0.088		0.012	−0.018	−0.69	159.74			−0.58	158.95
171	259	0.083		0.000	0.014		0.089		0.003	−0.014	−1.25	165.99			−1.17	165.17
172	260	−0.125		−0.020	−0.014		−0.129		0.030	0.010	−2.47	169.94			−2.34	169.19
173	261	0.075		0.013	0.001		0.080		−0.013	−0.002	−1.92	177.48			−1.88	176.64
174	262	0.075		0.027	−0.008		0.080		−0.030	0.006	−2.10	182.65			−2.02	181.88
175	263	0.067		0.027	−0.014		0.072		−0.031	0.012	−2.75	189.16			−2.64	188.43
176	264	−0.083		0.007	−0.004		−0.087		−0.005	0.004	−3.55	193.90			−3.51	193.11
177	265	−0.075		0.007	−0.005		−0.079		−0.006	0.005	−3.99	200.79			−3.96	200.01
178	266	−0.067		0.007	−0.012		−0.070		−0.006	0.012	−4.04	206.46			−3.97	205.73
179	267	−0.050		0.007	−0.008		−0.053		−0.007	0.008	−4.49	213.51			−4.45	212.77
180	268	−0.033		0.013	0.000		−0.035		−0.015	0.001	−4.64	219.24			−4.62	218.51
181	269	−0.025		0.020	0.005		−0.026		−0.023	−0.004	−5.14	226.41			−5.10	225.72
182	270	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−5.13	232.47			−5.11	231.78
183	271	0.000		0.007	0.000		0.000		−0.008	0.000	−5.52	239.91			−5.51	239.23
184	272	0.000		0.007	0.000		0.000		−0.008	0.000	−5.15	246.49			−5.15	245.84
185	273	0.000		0.013	0.000		0.000		−0.015	0.000	−4.28	255.35			−4.27	254.73

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 88 (Ra)																
186	274	0.000		0.007	0.000		0.000		−0.008	0.000	−3.66	262.35			−3.66	261.75
187	275	0.000	0.062	0.013	0.000	0.000	0.002	−0.083	−0.014	0.002	−2.71	271.45			−2.54	271.04
188	276	0.000	0.081	0.013	0.000	0.000	0.003	−0.108	−0.013	0.004	−1.95	278.74			−1.66	278.49
189	277	0.392		0.087	−0.001		0.445		−0.035	−0.030	−1.33	287.65			−0.15	288.32
190	278	0.392		0.093	−0.005		0.446		−0.043	−0.029	−1.13	294.55			0.12	295.32
191	279	0.392		0.093	−0.006		0.446		−0.043	−0.028	−1.34	302.79			−0.10	303.58
192	280	0.392		0.100	−0.009		0.447		−0.052	−0.029	−1.23	309.74			0.13	310.69
193	281	0.392		0.107	−0.015		0.447		−0.062	−0.027	−1.46	318.10			−0.05	319.14
194	282	0.375		0.093	−0.014		0.425		−0.051	−0.020	−1.16	325.40			0.07	326.30
195	283	0.367		0.093	−0.017		0.415		−0.055	−0.017	−1.27	334.03			−0.06	334.93
196	284	0.367		0.093	−0.022		0.415		−0.056	−0.012	−1.13	341.32			0.12	342.30
197	285	0.350		0.080	−0.014		0.394		−0.045	−0.013	−0.75	350.58			0.31	351.41
198	286	0.350		0.080	−0.011		0.394		−0.044	−0.016	−0.59	358.02			0.50	358.94
199	287	0.350		0.087	−0.013		0.395		−0.053	−0.017	−0.78	366.85			0.39	367.89
200	288	0.392		0.133	−0.038		0.450		−0.098	−0.018	−1.65	373.41			0.39	375.37
201	289	0.300		0.040	0.009		0.332		−0.008	−0.019	−0.06	384.15			0.67	384.84
202	290	0.292		0.033	0.013		0.322		−0.001	−0.020	0.07	391.86			0.81	392.60
203	291	0.400		0.153	−0.047		0.463		−0.121	−0.020	−2.20	398.87			0.39	401.51
204	292	0.400		0.160	−0.051		0.464		−0.130	−0.020	−2.09	406.70			0.78	409.66
Z = 89 (Ac)																
106	195	0.283		0.007	0.007		0.310		0.027	−0.005	0.54	34.82			0.39	37.36
107	196	0.267		0.020	0.002		0.293		0.007	−0.005	0.68	32.90			0.54	35.32
108	197	0.292		0.013	−0.002		0.321		0.021	0.002	0.86	29.58			0.72	31.87
109	198	0.300		0.020	−0.009		0.330		0.014	0.006	1.03	28.05			0.87	30.20
110	199	0.333		0.027	−0.004		0.369		0.016	−0.001	1.47	25.38			1.30	27.40
111	200	−0.250		0.007	−0.002		−0.257		0.016	0.001	1.74	24.33			1.64	26.30
112	201	−0.242		0.013	0.001		−0.249		0.008	0.000	1.57	21.42			1.49	23.29
113	202	−0.233		0.020	0.000		−0.240		−0.001	0.003	1.28	20.17			1.20	21.94
114	203	−0.217		0.027	0.003		−0.224		−0.012	0.002	1.02	17.52			0.95	19.20
115	204	−0.208		0.033	0.005		−0.215		−0.020	0.002	0.62	16.52			0.56	18.10
116	205	−0.200		0.033	0.003		−0.207		−0.022	0.004	0.16	14.05			0.12	15.53
117	206	−0.200		0.040	0.005		−0.207		−0.030	0.003	−0.35	13.27			−0.40	14.66
118	207	−0.192		0.040	0.003		−0.199		−0.031	0.005	−0.94	11.01			−0.97	12.31
119	208	−0.183		0.033	0.000		−0.190		−0.024	0.006	−1.52	10.50			−1.55	11.70
120	209	−0.117		0.007	−0.010		−0.122		−0.002	0.010	−2.34	8.34	8.89	0.170	−2.35	9.48
121	210	−0.100		0.007	−0.007		−0.105		−0.004	0.007	−2.84	8.24	8.62	0.160	−2.85	9.28
122	211	−0.067		0.007	0.003		−0.070		−0.006	−0.002	−3.21	6.86	7.09	0.110	−3.21	7.82
123	212	−0.058		0.013	0.004		−0.061		−0.014	−0.003	−3.86	6.93	7.24	0.080	−3.86	7.80
124	213	−0.042		0.013	0.005		−0.044		−0.015	−0.004	−4.50	5.60	6.10	0.070	−4.50	6.39
125	214	−0.017		0.000	0.000		−0.018		0.000	0.000	−5.32	5.80	6.38	0.070	−5.32	6.51
126	215	0.000		−0.007	0.000		0.000		0.008	0.000	−5.47	5.28	5.97	0.060	−5.48	5.90
127	216	−0.017		−0.007	0.003		−0.018		0.008	−0.003	−4.60	7.48	8.06	0.040	−4.60	8.03
128	217	0.008		−0.007	0.000		0.008		0.008	0.000	−3.67	8.35	8.69	0.013	−3.67	8.81
129	218	0.025	0.074	−0.013	0.001	−0.002	0.029	−0.101	0.018	0.003	−2.74	10.90	10.82	0.050	−2.71	11.32
130	219	0.017	0.073	−0.007	0.000	−0.004	0.020	−0.099	0.011	0.004	−1.63	12.24	11.54	0.050	−1.60	12.60
131	220	0.092	0.111	−0.053	0.008	−0.025	0.103	−0.155	0.072	0.008	−2.34	13.43	13.73	0.050	−2.20	13.83
132	221	0.100	0.103	−0.060	0.010	−0.022	0.111	−0.144	0.081	0.007	−1.96	14.34	14.50	0.050	−1.79	14.70
133	222	0.117	0.104	−0.073	0.014	−0.020	0.129	−0.145	0.099	0.007	−1.96	16.53	16.60	0.006	−1.75	16.86
134	223	0.133	0.108	−0.080	0.015	−0.019	0.147	−0.151	0.110	0.010	−1.38	17.92	17.82	0.008	−1.10	18.26
135	224	0.150	0.103	−0.080	0.015	−0.019	0.165	−0.144	0.112	0.011	−1.06	20.69	20.20	0.005	−0.79	20.97
136	225	0.150	0.091	−0.080	0.015	−0.017	0.164	−0.127	0.111	0.009	−0.79	22.05	21.63	0.008	−0.51	22.28
137	226	0.150	0.086	−0.080	0.015	−0.016	0.164	−0.120	0.111	0.008	−0.83	24.74	24.30	0.004	−0.56	24.90
138	227	0.158	0.076	−0.080	0.016	−0.008	0.172	−0.105	0.112	0.007	−0.53	26.40	25.85	0.003	−0.24	26.53
139	228	0.167	0.061	−0.080	0.016	−0.002	0.181	−0.085	0.113	0.006	−0.52	29.40	28.89	0.004	−0.25	29.45
140	229	0.175	0.041	−0.080	0.017	0.005	0.189	−0.057	0.114	0.005	−0.27	31.28	30.90	0.110	0.01	31.29
141	230	0.183	0.018	−0.080	0.018	0.010	0.197	−0.025	0.115	0.004	−0.47	34.32			−0.21	34.27
142	231	0.192		−0.073	0.017		0.207		0.108	0.004	−0.38	36.30	35.91	0.100	−0.12	36.19

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 89$ (Ac)																
143	232	0.192		−0.073	0.022		0.207		0.108	−0.002	−0.54	39.63			−0.28	39.49
144	233	0.200		−0.067	0.026		0.215		0.102	−0.007	−0.45	41.86			−0.17	41.69
145	234	0.200		−0.060	0.030		0.215		0.093	−0.013	−0.63	45.41			−0.37	45.19
146	235	0.200		−0.053	0.031		0.215		0.085	−0.016	−0.43	48.00			−0.17	47.74
147	236	0.208		−0.047	0.037		0.224		0.079	−0.023	−0.77	51.64			−0.48	51.36
148	237	0.208		−0.040	0.035		0.224		0.070	−0.023	−0.57	54.46			−0.30	54.14
149	238	0.208		−0.040	0.037		0.224		0.071	−0.025	−0.84	58.40			−0.55	58.06
150	239	0.208		−0.033	0.035		0.224		0.062	−0.025	−0.62	61.48			−0.35	61.10
151	240	0.217		−0.020	0.035		0.235		0.048	−0.028	−0.97	65.58			−0.70	65.15
152	241	0.217		−0.013	0.036		0.235		0.039	−0.030	−0.70	68.94			−0.41	68.51
153	242	0.208		−0.013	0.031		0.225		0.037	−0.026	−0.43	73.87			−0.20	73.36
154	243	0.208		−0.007	0.027		0.225		0.029	−0.023	−0.04	77.59			0.17	77.03
155	244	0.200		0.000	0.020		0.217		0.019	−0.018	0.23	82.74			0.39	82.10
156	245	0.200		0.007	0.016		0.217		0.010	−0.016	0.55	86.59			0.69	85.92
157	246	0.192		0.013	0.010		0.208		0.001	−0.012	0.55	91.69			0.66	90.97
158	247	0.192		0.020	0.007		0.209		−0.008	−0.010	0.74	95.63			0.86	94.91
159	248	0.192		0.027	0.002		0.209		−0.017	−0.007	0.49	100.69			0.61	99.95
160	249	0.192		0.033	0.001		0.209		−0.024	−0.007	0.52	104.69			0.67	103.96
161	250	0.192		0.047	−0.002		0.210		−0.041	−0.008	0.21	109.89			0.40	109.19
162	251	0.200		0.053	−0.005		0.219		−0.047	−0.006	0.26	114.12			0.50	113.45
163	252	0.183		0.053	−0.007		0.200		−0.050	−0.003	0.05	119.61			0.27	118.93
164	253	0.167		0.053	−0.009		0.182		−0.053	−0.001	0.32	124.26			0.54	123.57
165	254	0.083		−0.013	0.002		0.088		0.019	−0.001	1.46	131.31			1.49	130.42
166	255	0.075		−0.020	0.003		0.080		0.027	−0.001	1.48	135.91			1.52	135.04
167	256	0.075		−0.020	0.005		0.080		0.027	−0.003	0.93	141.45			0.98	140.58
168	257	0.083		−0.013	0.010		0.088		0.019	−0.009	0.45	145.76			0.51	144.89
169	258	0.083		−0.013	0.013		0.088		0.019	−0.012	−0.04	151.54			0.02	150.69
170	259	0.092		−0.007	0.017		0.098		0.013	−0.016	−0.33	156.23			−0.23	155.40
171	260	0.083		0.000	0.011		0.089		0.003	−0.011	−0.79	162.23			−0.74	161.36
172	261	−0.125		−0.020	−0.011		−0.129		0.030	0.008	−2.12	166.06			−2.00	165.27
173	262	0.083		0.020	−0.002		0.089		−0.021	0.000	−1.58	173.25			−1.53	172.40
174	263	0.075		0.027	−0.009		0.080		−0.030	0.007	−1.75	178.42			−1.67	177.60
175	264	0.075		0.033	−0.016		0.080		−0.038	0.013	−2.41	184.59			−2.27	183.84
176	265	−0.083		0.007	−0.003		−0.087		−0.005	0.003	−3.05	189.47			−3.02	188.62
177	266	−0.083		0.013	−0.002		−0.087		−0.012	0.003	−3.60	195.92			−3.56	195.09
178	267	−0.075		0.013	−0.010		−0.079		−0.013	0.011	−3.62	201.59			−3.56	200.80
179	268	−0.050		0.013	−0.005		−0.053		−0.014	0.006	−3.98	208.40			−3.95	207.60
180	269	−0.033		0.013	0.001		−0.035		−0.015	0.000	−4.11	214.14			−4.09	213.34
181	270	−0.025		0.020	0.006		−0.026		−0.023	−0.005	−4.60	220.99			−4.56	220.22
182	271	−0.017		0.020	0.006		−0.018		−0.023	−0.005	−4.54	227.09			−4.49	226.35
183	272	0.000		0.007	0.000		0.000		−0.008	0.000	−4.93	234.20			−4.92	233.44
184	273	0.000		0.007	0.000		0.000		−0.008	0.000	−4.55	240.79			−4.55	240.05
185	274	0.000		0.013	0.000		0.000		−0.015	0.000	−3.69	249.30			−3.68	248.60
186	275	0.000		0.007	0.000		0.000		−0.008	0.000	−3.07	256.30			−3.06	255.61
187	276	0.000	0.060	0.013	0.000	0.000	0.002	−0.080	−0.014	0.002	−2.11	265.08			−1.96	264.56
188	277	0.000	0.093	0.013	0.000	0.000	0.004	−0.124	−0.012	0.005	−1.36	272.35			−1.01	272.06
189	278	0.392		0.093	−0.001		0.446		−0.042	−0.033	−1.46	280.23			−0.26	280.81
190	279	0.392		0.093	−0.004		0.446		−0.043	−0.030	−1.31	287.06			−0.10	287.68
191	280	0.400		0.107	−0.010		0.457		−0.058	−0.032	−1.44	295.06			−0.10	295.84
192	281	0.392		0.107	−0.011		0.448		−0.061	−0.030	−1.36	301.99			0.02	302.83
193	282	0.392		0.107	−0.015		0.447		−0.062	−0.027	−1.63	309.98			−0.29	310.83
194	283	0.383		0.107	−0.020		0.436		−0.066	−0.022	−1.44	317.17			−0.08	318.07
195	284	0.375		0.100	−0.020		0.426		−0.061	−0.018	−1.63	325.39			−0.39	326.21
196	285	0.367		0.100	−0.024		0.416		−0.065	−0.014	−1.36	332.81			−0.08	333.70
197	286	0.358		0.093	−0.018		0.405		−0.058	−0.016	−1.31	341.42			−0.14	342.23
198	287	0.358		0.093	−0.018		0.405		−0.058	−0.016	−1.16	348.86			0.05	349.75
199	288	0.392		0.133	−0.039		0.450		−0.098	−0.017	−1.98	356.74			−0.08	358.37

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 89 (Ac)																
200	289	0.400		0.140	−0.042		0.461		−0.104	−0.018	−1.83	364.33			0.29	366.21
201	290	0.300		0.040	0.009		0.332		−0.008	−0.019	−0.30	374.70			0.41	375.21
202	291	0.292		0.033	0.014		0.322		−0.001	−0.021	−0.20	382.37			0.52	382.94
203	292	0.400		0.160	−0.049		0.464		−0.129	−0.022	−2.38	389.17			0.28	391.72
204	293	0.400		0.160	−0.051		0.464		−0.130	−0.020	−2.23	397.03			0.53	399.72
205	294	0.400		0.160	−0.054		0.463		−0.131	−0.017	−2.49	405.88			0.31	408.66
206	295	0.392		0.160	−0.054		0.454		−0.133	−0.016	−2.29	413.93			0.59	416.83
Z = 90 (Th)																
108	198	0.258		0.027	0.000		0.283		−0.004	−0.006	0.87	37.16			0.76	39.79
109	199	0.275		0.027	−0.007		0.302		−0.001	0.001	0.99	35.54			0.85	38.01
110	200	0.308		0.020	−0.005		0.339		0.017	0.003	1.25	32.23			1.11	34.58
111	201	0.342		0.033	−0.003		0.380		0.011	−0.004	1.74	31.36			1.55	33.54
112	202	−0.242		0.013	−0.002		−0.249		0.008	0.003	1.96	28.40			1.87	30.56
113	203	−0.233		0.020	0.000		−0.240		−0.001	0.003	1.70	27.14			1.62	29.18
114	204	−0.217		0.027	0.003		−0.224		−0.012	0.002	1.48	24.10			1.42	26.06
115	205	−0.208		0.033	0.004		−0.215		−0.020	0.003	1.10	23.07			1.04	24.91
116	206	−0.200		0.033	0.003		−0.207		−0.022	0.004	0.65	20.17			0.61	21.92
117	207	−0.192		0.040	0.004		−0.199		−0.031	0.004	0.11	19.32			0.07	20.96
118	208	−0.175		0.027	−0.003		−0.182		−0.018	0.007	−0.53	16.58			−0.56	18.13
119	209	−0.167		0.020	−0.004		−0.174		−0.012	0.007	−1.12	16.01			−1.15	17.46
120	210	−0.142		0.013	−0.013		−0.148		−0.006	0.014	−1.71	13.66			−1.72	15.03
121	211	−0.100		0.007	−0.007		−0.105		−0.004	0.007	−2.23	13.50			−2.24	14.77
122	212	−0.067		0.013	0.002		−0.070		−0.013	−0.001	−2.55	11.76			−2.55	12.94
123	213	−0.067		0.020	0.004		−0.070		−0.021	−0.002	−3.22	11.75			−3.22	12.85
124	214	−0.050		0.020	0.007		−0.052		−0.022	−0.005	−3.75	10.12			−3.75	11.13
125	215	−0.017		0.007	0.000		−0.018		−0.008	0.000	−4.56	10.30	10.89	0.070	−4.56	11.21
126	216	0.008		−0.007	0.000		0.008		0.008	0.000	−4.65	9.42			−4.66	10.25
127	217	−0.017		−0.007	0.002		−0.018		0.008	−0.002	−3.84	11.52	12.16	0.030	−3.84	12.26
128	218	0.008		−0.007	−0.001		0.008		0.008	0.001	−2.92	11.96	12.35	0.014	−2.92	12.63
129	219	0.025	0.076	−0.013	0.001	0.000	0.029	−0.103	0.018	0.003	−2.07	14.40	14.45	0.050	−2.04	15.02
130	220	0.025	0.087	−0.013	0.001	−0.002	0.030	−0.118	0.019	0.005	−1.19	15.10	14.65	0.022	−1.14	15.66
131	221	0.092	0.106	−0.053	0.008	−0.024	0.102	−0.147	0.072	0.007	−1.79	16.37	16.92	0.011	−1.65	16.95
132	222	0.100	0.099	−0.060	0.010	−0.021	0.111	−0.138	0.081	0.006	−1.44	16.85	17.18	0.013	−1.27	17.38
133	223	0.125	0.102	−0.073	0.014	−0.017	0.138	−0.142	0.100	0.007	−1.43	19.01	19.36	0.028	−1.22	19.52
134	224	0.150	0.097	−0.080	0.015	−0.014	0.164	−0.135	0.112	0.010	−0.65	20.20	19.98	0.013	−0.38	20.70
135	225	0.150	0.098	−0.080	0.015	−0.017	0.165	−0.137	0.112	0.010	−0.76	22.51	22.28	0.009	−0.49	22.94
136	226	0.158		−0.080	−0.014		0.173		0.111	0.034	−0.19	23.78	23.18	0.006	0.07	24.14
137	227	0.158		−0.087	−0.011		0.173		0.120	0.033	−0.45	26.21	25.80	0.003	−0.18	26.52
138	228	0.167		−0.080	−0.004		0.182		0.112	0.025	−0.30	27.33	26.75	0.004	−0.04	27.57
139	229	0.175		−0.080	0.001		0.190		0.114	0.020	−0.52	30.07	29.58	0.003	−0.28	30.23
140	230	0.183		−0.080	0.008		0.198		0.115	0.014	−0.43	31.39	30.86	0.002	−0.17	31.52
141	231	0.183		−0.080	0.011		0.198		0.115	0.011	−0.67	34.36	33.81	0.002	−0.41	34.44
142	232	0.192		−0.073	0.018		0.207		0.108	0.003	−0.60	35.94	35.44	0.002	−0.34	35.96
143	233	0.200		−0.067	0.023		0.215		0.102	−0.003	−0.78	39.22	38.73	0.002	−0.53	39.18
144	234	0.200		−0.067	0.026		0.215		0.102	−0.007	−0.66	41.09	40.61	0.004	−0.38	41.03
145	235	0.200		−0.060	0.030		0.215		0.093	−0.013	−0.84	44.62	44.25	0.050	−0.58	44.51
146	236	0.200		−0.060	0.033		0.215		0.094	−0.016	−0.67	46.79			−0.38	46.67
147	237	0.208		−0.053	0.038		0.223		0.087	−0.022	−1.02	50.40			−0.71	50.24
148	238	0.208		−0.047	0.036		0.224		0.079	−0.022	−0.82	52.85			−0.52	52.64
149	239	0.208		−0.040	0.036		0.224		0.071	−0.024	−1.03	56.81			−0.75	56.56
150	240	0.208		−0.033	0.035		0.224		0.062	−0.025	−0.81	59.52			−0.54	59.22
151	241	0.217		−0.020	0.036		0.235		0.048	−0.029	−1.16	63.59			−0.89	63.25
152	242	0.217		−0.013	0.036		0.235		0.039	−0.030	−0.89	66.59			−0.60	66.23
153	243	0.208		−0.013	0.032		0.225		0.037	−0.027	−0.60	71.51			−0.37	71.07
154	244	0.208		−0.007	0.027		0.225		0.029	−0.023	−0.19	74.87			0.02	74.38
155	245	0.200		0.000	0.021		0.217		0.019	−0.019	0.11	80.03			0.27	79.46
156	246	0.200		0.007	0.017		0.217		0.010	−0.017	0.44	83.53			0.59	82.93

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 90 (Th)																
157	247	0.200		0.013	0.012		0.217		0.002	−0.014	0.37	88.54			0.50	87.89
158	248	0.192		0.020	0.008		0.209		−0.008	−0.011	0.66	92.23			0.79	91.56
159	249	0.192		0.027	0.004		0.209		−0.017	−0.009	0.43	97.27			0.55	96.58
160	250	0.192		0.033	0.002		0.209		−0.024	−0.008	0.48	100.93			0.62	100.25
161	251	0.200		0.047	−0.003		0.219		−0.040	−0.007	0.17	106.12			0.37	105.46
162	252	0.200		0.053	−0.004		0.219		−0.047	−0.007	0.22	109.99			0.45	109.35
163	253	0.192		0.060	−0.009		0.211		−0.057	−0.003	0.09	115.55			0.35	114.93
164	254	0.175		0.060	−0.011		0.192		−0.060	0.000	0.42	119.90			0.69	119.28
165	255	0.150		0.040	−0.002		0.163		−0.039	−0.004	0.55	125.91			0.69	125.15
166	256	0.083		−0.020	0.007		0.088		0.027	−0.005	1.58	131.18			1.64	130.33
167	257	0.083		−0.020	0.008		0.088		0.027	−0.006	1.04	136.72			1.10	135.86
168	258	0.083		−0.013	0.011		0.088		0.019	−0.010	0.76	140.86			0.82	140.00
169	259	0.092		−0.007	0.015		0.098		0.012	−0.014	0.07	146.44			0.14	145.59
170	260	0.092		−0.007	0.019		0.098		0.013	−0.018	−0.04	150.96			0.07	150.14
171	261	0.092		0.000	0.013		0.098		0.004	−0.013	−0.57	156.88			−0.51	156.01
172	262	−0.125		−0.020	−0.013		−0.129		0.030	0.009	−1.66	160.60			−1.53	159.80
173	263	0.083		0.020	−0.001		0.089		−0.021	−0.001	−1.17	167.72			−1.12	166.84
174	264	0.075		0.027	−0.009		0.080		−0.030	0.007	−1.28	172.61			−1.20	171.77
175	265	0.075		0.033	−0.016		0.080		−0.038	0.013	−1.93	178.78			−1.78	178.00
176	266	−0.092		0.007	−0.003		−0.096		−0.005	0.003	−2.50	183.39			−2.46	182.51
177	267	−0.083		0.013	−0.003		−0.087		−0.012	0.004	−3.04	189.84			−3.00	188.97
178	268	−0.075		0.013	−0.011		−0.079		−0.013	0.012	−3.08	195.16			−3.01	194.33
179	269	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−3.34	202.06			−3.31	201.20
180	270	−0.033		0.013	0.001		−0.035		−0.015	0.000	−3.47	207.46			−3.45	206.61
181	271	−0.025		0.020	0.006		−0.026		−0.023	−0.005	−3.93	214.33			−3.89	213.51
182	272	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−3.88	220.09			−3.86	219.26
183	273	0.000		0.007	0.000		0.000		−0.008	0.000	−4.19	227.26			−4.19	226.43
184	274	0.000		0.007	0.000		0.000		−0.008	0.000	−3.80	233.53			−3.80	232.73
185	275	0.000		0.013	0.000		0.000		−0.015	0.000	−2.92	242.07			−2.90	241.29
186	276	0.000		0.007	0.000		0.000		−0.008	0.000	−2.32	248.71			−2.32	247.94
187	277	0.000	0.079	0.013	0.000	0.000	0.003	−0.106	−0.013	0.004	−1.43	257.41			−1.18	256.91
188	278	0.000	0.091	0.007	0.000	0.000	0.004	−0.122	−0.005	0.005	−0.81	264.23			−0.48	263.83
189	279	0.392		0.093	0.003		0.446		−0.041	−0.036	−1.35	271.66			−0.10	272.20
190	280	0.392		0.093	0.000		0.446		−0.042	−0.034	−1.19	278.18			0.06	278.75
191	281	0.400		0.107	−0.007		0.457		−0.057	−0.034	−1.31	286.18			0.06	286.90
192	282	0.400		0.113	−0.012		0.458		−0.065	−0.033	−1.13	292.88			0.33	293.72
193	283	0.392		0.113	−0.015		0.448		−0.069	−0.029	−1.44	300.84			−0.01	301.67
194	284	0.383		0.107	−0.017		0.436		−0.066	−0.024	−1.31	307.65			0.05	308.44
195	285	0.375		0.107	−0.020		0.427		−0.069	−0.021	−1.50	315.87			−0.16	316.67
196	286	0.367		0.100	−0.021		0.416		−0.064	−0.016	−1.24	322.96			0.04	323.73
197	287	0.358		0.093	−0.016		0.405		−0.058	−0.017	−1.21	331.55			−0.04	332.24
198	288	0.383		0.120	−0.031		0.438		−0.084	−0.017	−1.50	338.23			0.14	339.43
199	289	0.392		0.133	−0.038		0.450		−0.098	−0.018	−1.79	346.65			0.11	348.14
200	290	0.300		0.040	0.012		0.332		−0.007	−0.022	−0.06	355.49			0.69	355.87
201	291	0.300		0.040	0.013		0.332		−0.007	−0.023	−0.38	364.01			0.38	364.44
202	292	0.283		0.027	0.017		0.312		0.004	−0.022	−0.26	371.40			0.45	371.82
203	293	0.400		0.160	−0.049		0.464		−0.129	−0.022	−2.26	378.38			0.39	380.76
204	294	0.400		0.160	−0.052		0.464		−0.130	−0.019	−2.11	385.93			0.63	388.46
205	295	0.400		0.160	−0.055		0.463		−0.131	−0.016	−2.37	394.77			0.41	397.38
206	296	0.392		0.160	−0.054		0.454		−0.133	−0.016	−2.17	402.52			0.68	405.24
207	297	0.383		0.160	−0.052		0.443		−0.136	−0.016	−2.24	411.69			0.60	414.44
208	298	0.367		0.147	−0.043		0.422		−0.124	−0.016	−1.64	419.97			0.89	422.45
209	299	0.192		−0.047	0.032		0.206		0.076	−0.019	−2.21	428.76			−1.36	429.62
Z = 91 (Pa)																
109	200	0.275		0.020	−0.004		0.302		0.008	0.001	0.68	44.94			0.51	47.70
110	201	0.292		0.020	−0.005		0.321		0.012	0.002	0.96	41.61			0.80	44.25
111	202	0.342		0.040	−0.002		0.380		0.003	−0.008	1.55	40.40			1.31	42.83

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 91$ (Pa)																
112	203	0.167		−0.007	0.006		0.180		0.021	−0.004	1.57	37.18			1.52	39.68
113	204	0.158		0.000	0.004		0.170		0.011	−0.003	1.48	35.65			1.43	38.03
114	205	0.150		0.000	0.001		0.161		0.010	0.000	1.47	32.78			1.43	35.05
115	206	0.150		0.007	−0.002		0.162		0.001	0.001	1.11	31.34			1.07	33.49
116	207	−0.208		0.040	0.005		−0.215		−0.028	0.004	0.95	28.68			0.89	30.69
117	208	−0.200		0.040	0.004		−0.207		−0.029	0.004	0.41	27.41			0.34	29.30
118	209	−0.183		0.033	−0.002		−0.190		−0.024	0.008	−0.18	24.67			−0.23	26.47
119	210	−0.175		0.027	−0.003		−0.182		−0.018	0.007	−0.73	23.73			−0.77	25.42
120	211	−0.150		0.013	−0.013		−0.156		−0.005	0.014	−1.29	21.37			−1.31	22.98
121	212	−0.100		0.007	−0.006		−0.105		−0.004	0.006	−1.66	20.93			−1.67	22.45
122	213	−0.083		0.013	0.001		−0.087		−0.012	0.000	−1.95	19.17			−1.96	20.59
123	214	−0.075		0.013	0.004		−0.079		−0.013	−0.003	−2.55	18.83			−2.55	20.16
124	215	−0.050		0.013	0.006		−0.053		−0.014	−0.005	−3.05	17.19	17.68	0.120	−3.05	18.42
125	216	−0.017		0.000	−0.001		−0.018		0.000	0.001	−3.79	17.01	17.68	0.100	−3.79	18.16
126	217	0.000		−0.007	0.000		0.000		0.008	0.000	−3.91	16.08	17.02	0.090	−3.91	17.13
127	218	−0.017		−0.013	0.002		−0.018		0.015	−0.002	−3.03	17.83	18.60	0.090	−3.03	18.79
128	219	−0.008		−0.007	0.000		−0.008		0.008	0.000	−2.14	18.21	18.48	0.080	−2.14	19.08
129	220	−0.025		−0.013	0.002		−0.026		0.016	−0.002	−0.83	20.70	20.32	0.070	−0.83	21.49
130	221	−0.025		−0.007	−0.001		−0.026		0.009	0.001	0.16	21.47			0.16	22.18
131	222	0.100	0.100	−0.060	0.010	−0.021	0.111	−0.139	0.081	0.006	−1.53	21.25	21.94	0.070	−1.41	22.00
132	223	0.125	0.094	−0.073	0.014	−0.015	0.137	−0.131	0.099	0.006	−1.10	21.76	22.31	0.070	−0.93	22.49
133	224	0.142	0.100	−0.080	0.015	−0.013	0.156	−0.140	0.111	0.010	−0.95	23.67	23.78	0.070	−0.75	24.35
134	225	0.150	0.095	−0.080	0.015	−0.014	0.165	−0.133	0.112	0.010	−0.62	24.38	24.32	0.070	−0.39	25.01
135	226	0.150		−0.087	−0.015		0.165		0.119	0.036	−0.39	26.64	26.01	0.012	−0.17	27.20
136	227	0.158		−0.087	−0.012		0.173		0.120	0.034	−0.49	27.19	26.83	0.010	−0.25	27.70
137	228	0.167		−0.087	−0.007		0.182		0.121	0.030	−0.74	29.25	28.86	0.006	−0.51	29.68
138	229	0.175		−0.080	−0.001		0.190		0.114	0.023	−0.60	30.33	29.89	0.009	−0.38	30.68
139	230	0.175		−0.087	0.004		0.190		0.123	0.019	−0.88	32.60	32.17	0.004	−0.65	32.92
140	231	0.183		−0.080	0.010		0.198		0.115	0.012	−0.79	33.90	33.42	0.003	−0.56	34.15
141	232	0.192	0.011	−0.080	0.019	0.016	0.207	−0.015	0.117	0.004	−1.03	36.49	35.92	0.009	−0.80	36.68
142	233	0.192		−0.080	0.020		0.207		0.117	0.003	−0.98	38.01	37.49	0.002	−0.72	38.17
143	234	0.200		−0.073	0.025		0.215		0.110	−0.004	−1.21	40.86	40.33	0.005	−0.97	40.95
144	235	0.200		−0.067	0.026		0.215		0.102	−0.007	−1.06	42.73	42.33	0.050	−0.82	42.77
145	236	0.200		−0.067	0.031		0.215		0.102	−0.012	−1.27	45.85	45.34	0.200	−1.01	45.86
146	237	0.200		−0.060	0.032		0.215		0.093	−0.015	−1.04	48.06	47.64	0.100	−0.78	48.02
147	238	0.208		−0.053	0.037		0.223		0.087	−0.021	−1.41	51.26	50.77	0.060	−1.14	51.18
148	239	0.208		−0.047	0.036		0.224		0.079	−0.022	−1.21	53.69			−0.94	53.56
149	240	0.208		−0.040	0.036		0.224		0.071	−0.024	−1.40	57.31			−1.15	57.12
150	241	0.208		−0.033	0.035		0.224		0.062	−0.025	−1.18	59.99			−0.93	59.76
151	242	0.208		−0.027	0.036		0.224		0.055	−0.027	−1.33	63.88			−1.08	63.61
152	243	0.217		−0.020	0.038		0.235		0.048	−0.031	−1.29	66.62			−1.01	66.34
153	244	0.217		−0.013	0.032		0.235		0.039	−0.026	−1.17	71.01			−0.94	70.64
154	245	0.208		−0.013	0.029		0.225		0.037	−0.024	−0.54	74.56			−0.33	74.15
155	246	0.200		0.000	0.022		0.217		0.019	−0.020	−0.16	79.44			−0.01	78.93
156	247	0.200		0.000	0.019		0.217		0.019	−0.017	0.14	82.89			0.28	82.35
157	248	0.200		0.007	0.013		0.217		0.010	−0.013	0.12	87.57			0.23	86.98
158	249	0.200		0.013	0.010		0.217		0.002	−0.012	0.37	91.20			0.49	90.58
159	250	0.200		0.027	0.004		0.218		−0.015	−0.009	0.20	95.95			0.31	95.31
160	251	0.200		0.033	0.002		0.218		−0.023	−0.009	0.27	99.62			0.41	98.97
161	252	0.200		0.040	−0.002		0.219		−0.031	−0.006	0.01	104.48			0.16	103.83
162	253	0.200		0.053	−0.003		0.219		−0.047	−0.008	0.10	108.38			0.32	107.77
163	254	0.192		0.053	−0.008		0.210		−0.049	−0.003	−0.03	113.58			0.18	112.95
164	255	0.175		0.053	−0.010		0.191		−0.052	0.000	0.34	117.95			0.54	117.30
165	256	0.150		0.040	−0.002		0.163		−0.039	−0.004	0.60	123.75			0.73	123.01
166	257	0.142		0.020	0.005		0.153		−0.015	−0.008	0.66	128.02			0.75	127.22
167	258	0.092		−0.020	0.009		0.098		0.028	−0.007	1.09	134.18			1.15	133.35
168	259	0.092		−0.013	0.012		0.098		0.020	−0.010	0.83	138.34			0.90	137.49

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 91 (Pa)																
169	260	0.092		−0.013	0.014		0.098		0.020	−0.012	0.39	143.82			0.47	142.98
170	261	0.100		−0.007	0.018		0.107		0.013	−0.017	0.16	148.19			0.26	147.37
171	262	0.092		0.000	0.011		0.098		0.004	−0.011	−0.27	153.87			−0.22	153.00
172	263	−0.133		−0.020	−0.015		−0.138		0.031	0.011	−1.37	157.57			−1.23	156.77
173	264	0.083		0.013	−0.003		0.089		−0.013	0.002	−0.82	164.41			−0.79	163.51
174	265	0.083	0.012	0.027	−0.003	−0.012	0.089	−0.016	−0.029	0.001	−0.93	169.29			−0.86	168.43
175	266	0.075		0.027	−0.018		0.080		−0.031	0.016	−1.48	175.22			−1.35	174.41
176	267	−0.092		0.007	−0.002		−0.096		−0.005	0.003	−2.11	179.75			−2.08	178.85
177	268	−0.083		0.013	−0.002		−0.087		−0.012	0.003	−2.62	185.89			−2.59	185.00
178	269	−0.075		0.013	−0.009		−0.079		−0.013	0.010	−2.64	191.21			−2.59	190.35
179	270	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−2.88	197.80			−2.86	196.90
180	271	−0.033		0.013	0.001		−0.035		−0.015	0.000	−2.99	203.22			−2.97	202.32
181	272	−0.025		0.020	0.005		−0.026		−0.023	−0.004	−3.43	209.77			−3.39	208.91
182	273	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−3.34	215.56			−3.33	214.68
183	274	0.000		0.007	0.000		0.000		−0.008	0.000	−3.64	222.43			−3.63	221.55
184	275	0.000		0.007	0.000		0.000		−0.008	0.000	−3.22	228.71			−3.22	227.84
185	276	0.000		0.013	0.000		0.000		−0.015	0.000	−2.34	236.92			−2.32	236.08
186	277	0.000		0.007	0.000		0.000		−0.008	0.000	−1.75	243.54			−1.74	242.71
187	278	0.000	0.069	0.013	0.000	0.000	0.002	−0.092	−0.013	0.003	−0.91	251.86			−0.73	251.23
188	279	0.392		0.093	0.006		0.446		−0.041	−0.039	−1.24	257.73			−0.01	258.15
189	280	0.400		0.100	0.005		0.457		−0.046	−0.042	−1.42	265.19			−0.10	265.73
190	281	0.400		0.107	−0.004		0.458		−0.056	−0.037	−1.18	271.80			0.16	272.37
191	282	0.400		0.113	−0.008		0.458		−0.064	−0.036	−1.34	279.43			0.04	280.07
192	283	0.400		0.113	−0.011		0.458		−0.065	−0.034	−1.23	286.06			0.17	286.74
193	284	0.392		0.113	−0.014		0.448		−0.069	−0.030	−1.56	293.68			−0.20	294.35
194	285	0.383		0.113	−0.017		0.437		−0.073	−0.027	−1.41	300.50			−0.03	301.21
195	286	0.375		0.107	−0.018		0.427		−0.069	−0.023	−1.67	308.34			−0.39	308.98
196	287	0.375		0.113	−0.025		0.427		−0.077	−0.019	−1.48	315.35			−0.08	316.14
197	288	0.375		0.113	−0.025		0.427		−0.077	−0.019	−1.69	323.38			−0.30	324.19
198	289	0.383		0.127	−0.030		0.439		−0.092	−0.021	−1.59	330.46			0.09	331.58
199	290	0.392		0.133	−0.035		0.450		−0.097	−0.021	−1.81	338.62			−0.02	339.89
200	291	0.300		0.040	0.013		0.332		−0.007	−0.023	−0.36	347.19			0.37	347.42
201	292	0.292		0.033	0.016		0.323		0.000	−0.023	−0.70	355.38			0.00	355.62
202	293	0.283		0.027	0.019		0.312		0.005	−0.024	−0.60	362.74			0.10	363.02
203	294	0.275		0.020	0.022		0.302		0.011	−0.025	−0.83	371.18			−0.14	371.48
204	295	0.400		0.160	−0.049		0.464		−0.129	−0.022	−2.12	377.29			0.48	379.54
205	296	0.392		0.160	−0.049		0.454		−0.132	−0.020	−2.42	385.80			0.19	388.09
206	297	0.383		0.153	−0.046		0.442		−0.126	−0.019	−2.05	393.71			0.46	395.94
207	298	0.367		0.147	−0.040		0.422		−0.123	−0.019	−2.05	402.65			0.29	404.75
208	299	0.367		0.147	−0.039		0.422		−0.123	−0.020	−1.72	410.66			0.68	412.86
209	300	0.350		0.133	−0.029		0.400		−0.110	−0.021	−1.26	420.19			0.79	422.08
210	301	0.192		−0.047	0.036		0.206		0.076	−0.023	−2.42	426.83			−1.49	427.65
211	302	0.192		−0.040	0.034		0.206		0.067	−0.023	−2.54	435.92			−1.69	436.69
Z = 92 (U)																
111	203	0.208		0.013	0.002		0.226		0.003	−0.004	1.32	48.07			1.24	50.98
112	204	0.192		0.007	0.003		0.208		0.007	−0.003	1.50	44.58			1.44	47.38
113	205	0.167		0.007	0.003		0.180		0.004	−0.004	1.46	43.06			1.41	45.74
114	206	0.150		0.007	0.002		0.162		0.001	−0.003	1.57	39.87			1.53	42.44
115	207	0.150		0.013	−0.002		0.162		−0.006	0.000	1.20	38.37			1.16	40.82
116	208	0.142		0.020	−0.007		0.153		−0.016	0.004	1.08	35.33			1.05	37.66
117	209	−0.200		0.040	0.003		−0.207		−0.029	0.005	0.79	34.26			0.73	36.44
118	210	−0.175		0.027	−0.004		−0.182		−0.018	0.008	0.18	31.08			0.14	33.17
119	211	−0.175		0.027	−0.004		−0.182		−0.018	0.008	−0.35	30.11			−0.39	32.08
120	212	−0.150		0.013	−0.014		−0.156		−0.005	0.015	−0.88	27.35			−0.90	29.24
121	213	−0.108		0.007	−0.008		−0.113		−0.003	0.008	−1.30	26.82			−1.32	28.60
122	214	−0.083		0.013	0.001		−0.087		−0.012	0.000	−1.49	24.75			−1.49	26.44
123	215	−0.075		0.020	0.004		−0.079		−0.021	−0.002	−2.07	24.39			−2.07	25.97

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 92$ (U)																
124	216	−0.050		0.020	0.006		−0.052		−0.022	−0.005	−2.52	22.38			−2.52	23.86
125	217	−0.017		0.000	0.000		−0.018		0.000	0.000	−3.26	22.17			−3.26	23.55
126	218	0.008		0.000	−0.001		0.008		0.000	0.001	−3.33	20.87			−3.33	22.15
127	219	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−2.39	22.64			−2.39	23.83
128	220	0.008		−0.007	0.000		0.008		0.008	0.000	−1.61	22.50			−1.61	23.60
129	221	0.042	0.087	−0.020	0.002	−0.004	0.048	−0.119	0.028	0.004	−1.27	23.98			−1.23	25.03
130	222	0.042	0.095	−0.013	0.001	−0.004	0.048	−0.130	0.020	0.006	−0.51	24.12			−0.46	25.10
131	223	0.100	0.097	−0.060	0.010	−0.019	0.110	−0.135	0.081	0.006	−0.95	25.12			−0.84	26.07
132	224	0.133	0.091	−0.073	0.014	−0.012	0.146	−0.127	0.100	0.006	−0.53	25.22			−0.37	26.15
133	225	0.150	0.095	−0.080	0.015	−0.011	0.165	−0.133	0.112	0.010	−0.33	27.14	27.37	0.050	−0.13	28.01
134	226	0.158		−0.080	−0.011		0.172		0.111	0.031	0.00	27.45	27.17	0.030	0.19	28.24
135	227	0.167		−0.087	−0.008		0.182		0.121	0.031	−0.36	29.08			−0.16	29.81
136	228	0.175		−0.080	−0.007		0.191		0.114	0.029	−0.42	29.29	29.21	0.016	−0.21	29.95
137	229	0.175		−0.087	−0.004		0.191		0.123	0.028	−0.77	31.21	31.18	0.009	−0.54	31.82
138	230	0.183		−0.080	0.002		0.199		0.115	0.020	−0.67	31.85	31.60	0.006	−0.45	32.38
139	231	0.183		−0.080	0.005		0.198		0.115	0.017	−0.98	34.08	33.78	0.050	−0.77	34.53
140	232	0.192		−0.080	0.013		0.207		0.117	0.010	−0.98	34.90	34.59	0.004	−0.74	35.31
141	233	0.192		−0.080	0.015		0.207		0.117	0.008	−1.27	37.40	36.92	0.003	−1.04	37.74
142	234	0.200		−0.073	0.021		0.215		0.110	0.000	−1.23	38.52	38.14	0.002	−1.00	38.81
143	235	0.200		−0.073	0.026		0.215		0.110	−0.005	−1.46	41.34	40.92	0.002	−1.22	41.58
144	236	0.200		−0.067	0.027		0.215		0.102	−0.008	−1.30	42.84	42.44	0.002	−1.06	43.03
145	237	0.200		−0.067	0.032		0.215		0.102	−0.013	−1.51	45.93	45.39	0.002	−1.25	46.08
146	238	0.200		−0.060	0.032		0.215		0.093	−0.015	−1.27	47.77	47.31	0.002	−1.01	47.86
147	239	0.208		−0.053	0.038		0.223		0.087	−0.022	−1.63	50.95	50.57	0.002	−1.36	51.01
148	240	0.208		−0.047	0.037		0.224		0.079	−0.023	−1.43	53.01	52.71	0.005	−1.16	53.00
149	241	0.208		−0.040	0.037		0.224		0.071	−0.025	−1.62	56.59			−1.37	56.53
150	242	0.208		−0.033	0.036		0.224		0.062	−0.026	−1.41	58.90			−1.16	58.78
151	243	0.208		−0.027	0.037		0.224		0.055	−0.028	−1.57	62.75			−1.32	62.59
152	244	0.217		−0.013	0.038		0.235		0.040	−0.032	−1.49	65.16			−1.22	64.98
153	245	0.217		−0.013	0.034		0.235		0.039	−0.028	−1.41	69.48			−1.18	69.23
154	246	0.208		−0.007	0.028		0.225		0.030	−0.024	−0.74	72.72			−0.54	72.39
155	247	0.200		0.000	0.022		0.217		0.019	−0.020	−0.39	77.54			−0.23	77.12
156	248	0.200		0.000	0.020		0.217		0.019	−0.018	−0.08	80.63			0.06	80.18
157	249	0.200		0.013	0.014		0.217		0.003	−0.016	−0.08	85.32			0.05	84.82
158	250	0.200		0.020	0.010		0.218		−0.006	−0.013	0.19	88.60			0.31	88.07
159	251	0.200		0.027	0.005		0.218		−0.015	−0.010	0.00	93.31			0.12	92.74
160	252	0.200		0.033	0.003		0.218		−0.023	−0.010	0.08	96.63			0.23	96.05
161	253	0.200		0.040	0.000		0.219		−0.031	−0.008	−0.17	101.48			−0.02	100.89
162	254	0.200		0.053	−0.002		0.219		−0.047	−0.009	−0.06	105.04			0.16	104.49
163	255	0.192		0.053	−0.007		0.210		−0.049	−0.004	−0.14	110.28			0.07	109.69
164	256	0.183		0.060	−0.011		0.201		−0.059	−0.001	0.28	114.35			0.53	113.79
165	257	0.158		0.040	−0.003		0.172		−0.038	−0.004	0.21	119.79			0.35	119.10
166	258	0.150		0.027	0.002		0.162		−0.023	−0.006	0.68	124.13			0.79	123.38
167	259	0.125		0.013	0.011		0.135		−0.008	−0.013	0.42	129.57			0.50	128.79
168	260	0.108		0.000	0.011		0.116		0.005	−0.011	0.67	133.89			0.73	133.07
169	261	0.100		−0.007	0.014		0.107		0.013	−0.013	0.36	139.49			0.43	138.67
170	262	0.100		−0.007	0.017		0.107		0.013	−0.016	0.36	143.75			0.46	142.94
171	263	0.092		0.000	0.011		0.098		0.004	−0.011	−0.06	149.42			−0.01	148.56
172	264	−0.133		−0.020	−0.014		−0.138		0.031	0.010	−1.03	152.90			−0.91	152.11
173	265	0.092		0.020	−0.003		0.099		−0.021	0.001	−0.66	159.56			−0.60	158.68
174	266	0.083		0.027	−0.011		0.089		−0.030	0.008	−0.72	164.14			−0.63	163.29
175	267	0.083		0.033	−0.017		0.089		−0.037	0.014	−1.29	170.02			−1.15	169.23
176	268	−0.092		0.007	−0.003		−0.096		−0.005	0.003	−1.75	174.40			−1.71	173.50
177	269	−0.092		0.013	−0.002		−0.096		−0.012	0.003	−2.23	180.55			−2.19	179.65
178	270	−0.083		0.013	−0.010		−0.087		−0.012	0.011	−2.28	185.52			−2.21	184.64
179	271	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−2.45	192.16			−2.43	191.24
180	272	−0.033		0.013	0.001		−0.035		−0.015	0.000	−2.53	197.27			−2.52	196.35

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 92$ (U)																
181	273	−0.025		0.013	0.003		−0.026		−0.015	−0.002	−2.96	203.82			−2.94	202.91
182	274	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−2.84	209.32			−2.82	208.40
183	275	0.000		0.007	0.000		0.000		−0.008	0.000	−3.13	216.17			−3.13	215.25
184	276	0.000		0.007	0.000		0.000		−0.008	0.000	−2.71	222.13			−2.71	221.23
185	277	0.000		0.013	0.000		0.000		−0.015	0.000	−1.79	230.37			−1.78	229.48
186	278	0.000		0.007	0.000		0.000		−0.008	0.000	−1.20	236.67			−1.20	235.78
187	279	0.000	0.089	0.013	0.000	0.000	0.004	−0.119	−0.012	0.005	−0.45	244.89			−0.16	244.31
188	280	0.392		0.093	0.008		0.447		−0.040	−0.041	−1.04	250.18			0.21	250.57
189	281	0.392		0.100	0.007		0.448		−0.048	−0.043	−1.25	257.60			0.08	258.08
190	282	0.392		0.100	0.003		0.447		−0.049	−0.040	−1.10	263.79			0.21	264.27
191	283	0.392		0.107	0.000		0.448		−0.058	−0.040	−1.29	271.39			0.08	271.95
192	284	0.392		0.113	−0.006		0.449		−0.067	−0.038	−1.08	277.80			0.36	278.45
193	285	0.392		0.113	−0.010		0.449		−0.068	−0.034	−1.33	285.48			0.05	286.10
194	286	0.383		0.113	−0.013		0.438		−0.072	−0.031	−1.21	291.97			0.20	292.62
195	287	0.375		0.107	−0.015		0.427		−0.068	−0.026	−1.46	299.80			−0.17	300.36
196	288	0.367		0.107	−0.018		0.417		−0.072	−0.022	−1.20	306.58			0.11	307.18
197	289	0.367		0.107	−0.018		0.417		−0.072	−0.022	−1.38	314.63			−0.07	315.26
198	290	0.383		0.127	−0.026		0.439		−0.091	−0.025	−1.29	321.38			0.38	322.39
199	291	0.383		0.127	−0.026		0.439		−0.091	−0.025	−1.49	329.57			0.18	330.61
200	292	0.292		0.033	0.016		0.323		0.000	−0.023	−0.35	337.51			0.35	337.61
201	293	0.275		0.020	0.017		0.302		0.011	−0.020	−0.66	345.73			−0.06	345.75
202	294	0.275		0.020	0.022		0.302		0.011	−0.025	−0.71	352.64			−0.02	352.78
203	295	0.267		0.013	0.025		0.293		0.018	−0.025	−1.01	361.00			−0.32	361.18
204	296	0.258		0.007	0.027		0.282		0.024	−0.026	−0.83	368.28			−0.12	368.51
205	297	0.258		0.013	0.026		0.282		0.016	−0.027	−0.83	377.08			−0.12	377.34
206	298	0.375		0.147	−0.037		0.432		−0.120	−0.023	−1.62	383.52			0.68	385.41
207	299	0.367		0.147	−0.036		0.423		−0.122	−0.023	−1.77	392.31			0.53	394.24
208	300	0.358		0.140	−0.031		0.411		−0.116	−0.023	−1.28	400.18			0.91	402.03
209	301	0.200		−0.040	0.033		0.215		0.069	−0.021	−2.42	408.10			−1.63	408.60
210	302	0.192		−0.047	0.036		0.206		0.076	−0.023	−2.44	415.60			−1.52	416.26
211	303	0.192		−0.040	0.035		0.206		0.067	−0.024	−2.57	424.67			−1.73	425.29
212	304	0.300		0.087	0.002		0.337		−0.065	−0.028	−0.44	434.44			0.87	435.57
213	305	0.192		−0.033	0.035		0.206		0.059	−0.026	−2.43	441.78			−1.61	442.45
$Z = 93$ (Np)																
113	206	0.183		0.000	0.004		0.198		0.015	−0.003	1.07	52.26			1.00	55.25
114	207	0.167		0.000	0.003		0.180		0.012	−0.002	1.19	49.04			1.14	51.91
115	208	0.150		0.007	0.001		0.162		0.001	−0.002	1.12	47.41			1.07	50.16
116	209	0.150		0.013	−0.005		0.162		−0.007	0.003	0.99	44.31			0.95	46.94
117	210	0.142		0.027	−0.009		0.153		−0.025	0.005	0.73	42.85			0.70	45.36
118	211	−0.167		0.020	−0.006		−0.174		−0.011	0.009	0.42	39.93			0.38	42.30
119	212	−0.158		0.020	−0.007		−0.164		−0.013	0.010	−0.10	38.55			−0.14	40.81
120	213	−0.150		0.013	−0.015		−0.156		−0.005	0.016	−0.56	35.82			−0.58	37.98
121	214	−0.117		0.013	−0.009		−0.122		−0.009	0.010	−0.97	34.88			−0.99	36.93
122	215	−0.092		0.013	0.000		−0.096		−0.012	0.001	−1.07	32.85			−1.09	34.80
123	216	−0.083		0.020	0.003		−0.087		−0.020	−0.001	−1.58	32.15			−1.59	33.99
124	217	−0.058		0.020	0.007		−0.061		−0.022	−0.005	−1.92	30.21			−1.92	31.95
125	218	−0.017		0.000	0.001		−0.018		0.000	−0.001	−2.51	29.73			−2.52	31.37
126	219	0.000	0.022	0.000	0.000	−0.001	0.000	−0.029	0.000	0.000	−2.68	28.29			−2.68	29.83
127	220	−0.025		−0.007	0.002		−0.026		0.008	−0.002	−1.70	29.70			−1.71	31.14
128	221	−0.008	0.025	0.000	0.000	−0.001	−0.008	−0.033	0.000	0.000	−0.98	29.47			−0.98	30.81
129	222	0.050		−0.027	−0.012		0.054		0.033	0.014	0.30	31.48			0.31	32.74
130	223	0.100	0.097	−0.047	0.007	−0.018	0.110	−0.135	0.065	0.007	−0.73	29.80			−0.66	31.02
131	224	0.125	0.086	−0.067	0.012	−0.011	0.137	−0.120	0.092	0.006	−0.47	31.09			−0.38	32.25
132	225	0.158	0.080	−0.073	0.014	−0.008	0.172	−0.111	0.103	0.008	0.01	31.22			0.14	32.33
133	226	0.158	0.082	−0.080	0.016	−0.009	0.172	−0.114	0.112	0.008	−0.08	32.45			0.06	33.49
134	227	0.175		−0.080	−0.004		0.190		0.114	0.026	−0.14	32.32			0.00	33.28
135	228	0.175		−0.087	−0.004		0.191		0.123	0.028	−0.52	33.55			−0.36	34.45

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 93$ (Np)																
136	229	0.183		−0.080	−0.001		0.199		0.115	0.024	−0.61	33.69	33.75	0.090	−0.44	34.51
137	230	0.183		−0.087	0.002		0.199		0.124	0.023	−0.96	35.22	35.22	0.050	−0.78	35.98
138	231	0.192		−0.080	0.008		0.208		0.117	0.015	−0.93	35.76	35.62	0.050	−0.75	36.44
139	232	0.192		−0.080	0.010		0.208		0.117	0.013	−1.29	37.54			−1.12	38.15
140	233	0.192		−0.080	0.015		0.207		0.117	0.008	−1.35	38.28			−1.15	38.83
141	234	0.200		−0.080	0.020		0.216		0.118	0.004	−1.65	40.38	39.95	0.009	−1.45	40.87
142	235	0.200		−0.073	0.022		0.215		0.110	−0.001	−1.66	41.42	41.04	0.002	−1.46	41.85
143	236	0.200		−0.073	0.026		0.215		0.110	−0.005	−1.85	43.90	43.37	0.050	−1.64	44.27
144	237	0.200		−0.067	0.028		0.215		0.102	−0.009	−1.74	45.33	44.87	0.002	−1.52	45.64
145	238	0.200		−0.067	0.032		0.215		0.102	−0.013	−1.92	48.08	47.45	0.002	−1.69	48.34
146	239	0.208		−0.060	0.036		0.223		0.095	−0.018	−1.87	49.69	49.31	0.002	−1.62	49.92
147	240	0.208		−0.053	0.038		0.223		0.087	−0.022	−2.08	52.65	52.32	0.015	−1.84	52.81
148	241	0.208		−0.047	0.037		0.224		0.079	−0.023	−1.87	54.68	54.26	0.070	−1.63	54.78
149	242	0.208		−0.040	0.037		0.224		0.071	−0.025	−2.06	57.90	57.41	0.200	−1.84	57.94
150	243	0.208		−0.040	0.037		0.224		0.071	−0.025	−1.87	60.15	59.92	0.011	−1.62	60.16
151	244	0.208		−0.027	0.037		0.224		0.055	−0.028	−2.00	63.67			−1.78	63.61
152	245	0.217		−0.020	0.039		0.235		0.048	−0.032	−1.96	66.01			−1.70	65.94
153	246	0.217		−0.013	0.034		0.235		0.039	−0.028	−1.83	70.02			−1.62	69.85
154	247	0.208		−0.013	0.030		0.225		0.037	−0.025	−1.19	73.19			−1.00	72.97
155	248	0.208		−0.007	0.025		0.225		0.029	−0.021	−1.00	77.49			−0.84	77.18
156	249	0.200		0.000	0.019		0.217		0.019	−0.017	−0.43	80.82			−0.30	80.46
157	250	0.200		0.007	0.014		0.217		0.010	−0.014	−0.42	85.16			−0.31	84.73
158	251	0.200		0.013	0.012		0.217		0.002	−0.014	−0.13	88.44			−0.01	87.98
159	252	0.200		0.020	0.008		0.218		−0.006	−0.011	−0.29	92.82			−0.19	92.32
160	253	0.200		0.033	0.004		0.218		−0.022	−0.011	−0.17	96.15			−0.04	95.64
161	254	0.200		0.040	0.001		0.219		−0.031	−0.009	−0.42	100.66			−0.28	100.13
162	255	0.200		0.047	0.000		0.219		−0.040	−0.010	−0.30	104.19			−0.13	103.67
163	256	0.200		0.053	−0.007		0.219		−0.048	−0.004	−0.35	109.11			−0.16	108.58
164	257	0.183		0.053	−0.009		0.200		−0.050	−0.001	0.05	113.15			0.25	112.59
165	258	0.167		0.040	−0.004		0.182		−0.037	−0.003	0.03	118.30			0.17	117.65
166	259	0.150		0.027	0.003		0.162		−0.023	−0.007	0.61	122.71			0.70	122.01
167	260	0.142		0.020	0.006		0.153		−0.015	−0.009	0.38	127.85			0.46	127.11
168	261	0.117		0.000	0.010		0.125		0.006	−0.010	0.58	132.09			0.64	131.32
169	262	0.108		−0.007	0.014		0.115		0.014	−0.013	0.34	137.42			0.41	136.63
170	263	0.100		−0.007	0.016		0.107		0.013	−0.015	0.48	141.79			0.56	141.01
171	264	0.100		0.000	0.010		0.107		0.005	−0.010	0.01	147.07			0.06	146.24
172	265	−0.133		−0.020	−0.014		−0.138		0.031	0.010	−0.85	150.66			−0.73	149.88
173	266	0.092		0.020	−0.003		0.099		−0.021	0.001	−0.45	156.99			−0.40	156.14
174	267	0.083		0.027	−0.011		0.089		−0.030	0.008	−0.46	161.62			−0.38	160.78
175	268	0.083		0.033	−0.017		0.089		−0.037	0.014	−1.00	167.19			−0.87	166.40
176	269	−0.092		0.007	−0.004		−0.096		−0.005	0.004	−1.46	171.55			−1.43	170.65
177	270	−0.092		0.013	−0.003		−0.096		−0.012	0.004	−1.93	177.38			−1.89	176.49
178	271	−0.083		0.013	−0.010		−0.087		−0.012	0.011	−1.95	182.37			−1.88	181.49
179	272	−0.050		0.007	−0.005		−0.053		−0.007	0.005	−2.02	188.77			−2.01	187.84
180	273	−0.050		0.013	0.001		−0.053		−0.014	0.000	−2.02	193.95			−2.00	193.02
181	274	−0.033		0.020	0.006		−0.035		−0.023	−0.005	−2.40	200.22			−2.36	199.32
182	275	−0.025		0.020	0.006		−0.026		−0.023	−0.005	−2.22	205.76			−2.18	204.85
183	276	0.000	0.012	0.007	0.000	0.000	0.000	−0.016	−0.008	0.000	−2.57	212.23			−2.56	211.30
184	277	0.000	0.015	0.007	0.000	0.000	0.000	−0.020	−0.008	0.000	−2.13	218.20			−2.12	217.27
185	278	0.000	0.032	0.013	0.000	0.000	0.000	−0.043	−0.015	0.001	−1.24	226.08			−1.20	225.19
186	279	0.000	0.066	0.007	0.000	0.000	0.002	−0.088	−0.007	0.003	−0.67	232.35			−0.53	231.57
187	280	0.375		0.073	0.012		0.424		−0.022	−0.035	−1.29	238.88			−0.34	238.92
188	281	0.375		0.080	0.010		0.424		−0.031	−0.037	−1.11	244.93			−0.08	245.05
189	282	0.383		0.093	0.008		0.436		−0.044	−0.041	−1.38	251.97			−0.22	252.24
190	283	0.383		0.093	0.006		0.436		−0.044	−0.039	−1.26	258.12			−0.08	258.42
191	284	0.392		0.107	0.001		0.448		−0.058	−0.041	−1.36	265.49			−0.05	265.93
192	285	0.383		0.107	−0.001		0.438		−0.062	−0.039	−1.27	271.77			0.05	272.24

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 93 (Np)																
193	286	0.383		0.107	−0.006		0.437		−0.063	−0.034	−1.51	279.16			−0.25	279.58
194	287	0.367		0.100	−0.005		0.417		−0.060	−0.031	−1.31	285.70			−0.12	286.07
195	288	0.367		0.100	−0.010		0.417		−0.062	−0.027	−1.52	293.27			−0.38	293.61
196	289	0.358		0.100	−0.013		0.406		−0.065	−0.023	−1.20	300.10			−0.04	300.47
197	290	0.350		0.093	−0.009		0.396		−0.059	−0.024	−1.01	308.21			0.06	308.52
198	291	0.350		0.093	−0.007		0.396		−0.058	−0.025	−0.87	315.01			0.25	315.38
199	292	0.250		−0.007	0.014		0.272		0.037	−0.009	−0.44	323.52			0.01	323.24
200	293	0.258		0.000	0.018		0.281		0.031	−0.015	−0.56	330.19			−0.05	330.01
201	294	0.275		0.020	0.018		0.302		0.011	−0.021	−1.02	337.95			−0.43	337.87
202	295	0.267		0.020	0.022		0.293		0.009	−0.025	−0.98	344.94			−0.34	344.94
203	296	0.267		0.013	0.026		0.293		0.018	−0.026	−1.40	352.88			−0.72	352.94
204	297	0.258		0.007	0.028		0.282		0.024	−0.027	−1.24	360.13			−0.54	360.25
205	298	0.250		0.000	0.031		0.273		0.031	−0.028	−1.52	368.35			−0.80	368.51
206	299	0.250		0.007	0.030		0.273		0.022	−0.029	−1.28	375.83			−0.55	376.02
207	300	0.200		−0.040	0.027		0.215		0.068	−0.015	−2.23	383.51			−1.57	383.67
208	301	0.200		−0.040	0.030		0.215		0.069	−0.018	−2.31	390.80			−1.59	391.06
209	302	0.200		−0.040	0.033		0.215		0.069	−0.021	−2.73	399.15			−1.96	399.49
210	303	0.192		−0.047	0.035		0.206		0.076	−0.022	−2.74	406.65			−1.87	407.13
211	304	0.192		−0.040	0.034		0.206		0.067	−0.023	−2.84	415.45			−2.05	415.88
212	305	0.300		0.087	0.004		0.337		−0.064	−0.030	−0.76	425.18			0.53	426.15
213	306	0.192		−0.033	0.033		0.206		0.059	−0.024	−2.68	432.29			−1.92	432.76
214	307	0.192		−0.027	0.033		0.207		0.051	−0.025	−2.40	440.34			−1.68	440.82
215	308	0.183		−0.020	0.029		0.197		0.041	−0.023	−2.29	449.62			−1.70	449.99
Z = 94 (Pu)																
115	209	0.158		0.013	0.000		0.171		−0.005	−0.002	0.96	55.05			0.91	58.13
116	210	0.150		0.020	−0.005		0.162		−0.015	0.002	0.95	51.65			0.91	54.60
117	211	0.150		0.027	−0.010		0.162		−0.024	0.006	0.64	50.09			0.60	52.91
118	212	0.133		0.027	−0.012		0.144		−0.026	0.008	0.50	46.92			0.48	49.62
119	213	−0.167		0.020	−0.006		−0.174		−0.011	0.009	0.12	45.63			0.07	48.19
120	214	−0.150		0.020	−0.014		−0.156		−0.013	0.016	−0.33	42.50			−0.35	44.96
121	215	−0.125		0.013	−0.008		−0.130		−0.008	0.009	−0.71	41.55			−0.73	43.89
122	216	−0.092		0.013	0.000		−0.096		−0.012	0.001	−0.80	39.12			−0.81	41.36
123	217	−0.083		0.020	0.004		−0.087		−0.020	−0.002	−1.29	38.38			−1.30	40.51
124	218	−0.058		0.020	0.007		−0.061		−0.022	−0.005	−1.62	36.04			−1.63	38.06
125	219	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.28	35.46			−2.28	37.37
126	220	0.008	0.011	0.000	0.000	−0.001	0.009	−0.015	0.000	0.000	−2.34	33.72			−2.34	35.53
127	221	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−1.40	35.05			−1.41	36.75
128	222	0.008		0.000	−0.001		0.008		0.000	0.001	−0.63	34.45			−0.64	36.05
129	223	0.050	0.089	−0.020	0.002	−0.015	0.057	−0.122	0.028	0.005	−0.64	35.15			−0.61	36.67
130	224	0.100	0.093	−0.047	0.007	−0.016	0.110	−0.129	0.065	0.006	−0.25	34.48			−0.19	35.95
131	225	0.117	0.090	−0.060	0.011	−0.013	0.128	−0.125	0.082	0.005	−0.14	35.58			−0.06	36.97
132	226	0.150	0.076	−0.067	0.013	−0.007	0.163	−0.106	0.095	0.006	0.25	35.22			0.36	36.55
133	227	0.158	0.072	−0.073	0.014	−0.007	0.172	−0.100	0.103	0.007	0.24	36.49			0.35	37.73
134	228	0.175		−0.080	−0.001		0.190		0.114	0.023	0.09	35.90			0.23	37.07
135	229	0.175		−0.080	−0.002		0.190		0.114	0.024	−0.26	37.11			−0.12	38.20
136	230	0.183		−0.080	0.003		0.198		0.115	0.019	−0.41	36.81			−0.25	37.83
137	231	0.183		−0.080	0.004		0.198		0.115	0.018	−0.74	38.31			−0.59	39.25
138	232	0.192		−0.080	0.012		0.208		0.117	0.011	−0.80	38.38	38.35	0.019	−0.62	39.26
139	233	0.192		−0.080	0.014		0.207		0.117	0.009	−1.17	40.12	40.02	0.050	−1.00	40.92
140	234	0.200		−0.073	0.019		0.216		0.109	0.002	−1.24	40.45	40.34	0.008	−1.07	41.17
141	235	0.200		−0.073	0.021		0.215		0.110	0.000	−1.59	42.48	42.16	0.050	−1.41	43.13
142	236	0.200		−0.073	0.025		0.215		0.110	−0.004	−1.64	43.10	42.88	0.004	−1.44	43.71
143	237	0.200		−0.067	0.028		0.215		0.102	−0.009	−1.87	45.51	45.09	0.006	−1.68	46.04
144	238	0.200		−0.067	0.031		0.215		0.102	−0.012	−1.78	46.53	46.16	0.002	−1.56	47.02
145	239	0.208		−0.060	0.036		0.223		0.095	−0.018	−2.12	49.08	48.58	0.002	−1.90	49.51
146	240	0.208		−0.053	0.037		0.223		0.087	−0.021	−1.95	50.44	50.12	0.002	−1.72	50.81
147	241	0.208		−0.047	0.038		0.224		0.079	−0.024	−2.17	53.37	52.95	0.002	−1.95	53.67

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 94 (Pu)																
148	242	0.208		−0.040	0.037		0.224		0.071	−0.025	−1.99	54.99	54.71	0.002	−1.77	55.23
149	243	0.208		−0.040	0.039		0.224		0.071	−0.027	−2.25	58.11	57.75	0.003	−2.02	58.31
150	244	0.208		−0.033	0.037		0.224		0.062	−0.027	−2.08	59.98	59.80	0.005	−1.85	60.12
151	245	0.217		−0.020	0.039		0.235		0.048	−0.032	−2.48	63.19	63.17	0.014	−2.25	63.28
152	246	0.217		−0.013	0.039		0.235		0.040	−0.033	−2.22	65.39	65.39	0.015	−1.97	65.44
153	247	0.217		−0.013	0.035		0.235		0.039	−0.029	−2.13	69.33			−1.91	69.31
154	248	0.208		−0.007	0.030		0.225		0.030	−0.026	−1.45	72.19			−1.26	72.08
155	249	0.208		0.000	0.026		0.226		0.021	−0.024	−1.25	76.46			−1.09	76.28
156	250	0.200		0.000	0.022		0.217		0.019	−0.020	−0.73	79.39			−0.59	79.14
157	251	0.200		0.007	0.016		0.217		0.010	−0.016	−0.74	83.68			−0.62	83.37
158	252	0.200		0.013	0.013		0.217		0.002	−0.015	−0.46	86.59			−0.34	86.24
159	253	0.200		0.027	0.008		0.218		−0.015	−0.013	−0.59	90.97			−0.47	90.58
160	254	0.200		0.033	0.006		0.218		−0.022	−0.012	−0.48	93.94			−0.35	93.53
161	255	0.200		0.040	0.003		0.219		−0.031	−0.011	−0.71	98.44			−0.57	98.00
162	256	0.200		0.047	0.002		0.219		−0.039	−0.012	−0.59	101.63			−0.42	101.19
163	257	0.200		0.053	−0.006		0.219		−0.047	−0.005	−0.62	106.54			−0.43	106.09
164	258	0.192		0.053	−0.009		0.210		−0.049	−0.002	−0.18	110.27			0.02	109.79
165	259	0.175		0.047	−0.005		0.191		−0.044	−0.004	−0.13	115.46			0.03	114.92
166	260	0.150		0.027	0.004		0.162		−0.023	−0.008	0.51	119.59			0.60	118.96
167	261	0.142		0.020	0.006		0.153		−0.015	−0.009	0.32	124.75			0.40	124.08
168	262	0.125		0.007	0.010		0.134		−0.001	−0.011	0.35	128.48			0.42	127.77
169	263	0.108		−0.007	0.014		0.115		0.014	−0.013	0.41	134.08			0.47	133.34
170	264	0.100		−0.007	0.016		0.107		0.013	−0.015	0.56	138.13			0.64	137.39
171	265	0.100		0.000	0.011		0.107		0.005	−0.011	0.08	143.38			0.13	142.60
172	266	−0.133		−0.013	−0.014		−0.138		0.023	0.011	−0.67	146.74			−0.56	145.99
173	267	0.092		0.020	−0.003		0.099		−0.021	0.001	−0.35	152.98			−0.30	152.15
174	268	0.092		0.027	−0.011		0.099		−0.029	0.008	−0.39	157.22			−0.31	156.42
175	269	0.083		0.033	−0.017		0.089		−0.037	0.014	−0.88	162.84			−0.76	162.06
176	270	−0.100		0.013	−0.002		−0.105		−0.011	0.003	−1.38	166.83			−1.33	165.96
177	271	−0.092		0.013	−0.003		−0.096		−0.012	0.004	−1.73	172.76			−1.69	171.88
178	272	−0.083		0.013	−0.010		−0.087		−0.012	0.011	−1.74	177.41			−1.68	176.54
179	273	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−1.81	183.80			−1.79	182.89
180	274	−0.042		0.013	0.000		−0.044		−0.014	0.001	−1.81	188.66			−1.80	187.73
181	275	−0.025		0.013	0.003		−0.026		−0.015	−0.002	−2.21	194.90			−2.20	193.96
182	276	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−2.04	200.10			−2.03	199.16
183	277	0.000		0.007	0.000		0.000		−0.008	0.000	−2.28	206.67			−2.28	205.72
184	278	0.000		0.007	0.000		0.000		−0.008	0.000	−1.83	212.32			−1.82	211.37
185	279	0.000	0.051	0.007	0.000	0.000	0.001	−0.068	−0.007	0.002	−0.99	220.13			−0.90	219.27
186	280	0.000	0.046	0.007	0.000	0.000	0.001	−0.061	−0.007	0.001	−0.38	226.12			−0.30	225.25
187	281	0.000	0.088	0.007	0.000	0.000	0.003	−0.118	−0.005	0.005	0.10	233.74			0.36	233.06
188	282	0.367		0.073	0.012		0.414		−0.025	−0.035	−0.74	238.44			0.23	238.47
189	283	0.375		0.080	0.011		0.425		−0.031	−0.037	−1.09	245.40			−0.04	245.51
190	284	0.367		0.080	0.010		0.415		−0.034	−0.036	−0.86	251.34			0.19	251.46
191	285	0.375		0.093	0.007		0.426		−0.047	−0.039	−1.20	258.46			−0.02	258.73
192	286	0.367		0.087	0.008		0.416		−0.042	−0.037	−1.00	264.53			0.14	264.76
193	287	0.367		0.093	0.002		0.417		−0.051	−0.035	−1.22	271.93			−0.09	272.17
194	288	0.358		0.087	0.001		0.405		−0.047	−0.031	−0.90	278.28			0.16	278.46
195	289	0.350		0.087	−0.003		0.395		−0.051	−0.027	−0.76	286.19			0.26	286.34
196	290	0.350		0.093	−0.009		0.396		−0.059	−0.024	−0.60	292.54			0.48	292.77
197	291	0.350		0.093	−0.008		0.396		−0.059	−0.024	−0.79	300.27			0.29	300.52
198	292	0.250		−0.013	0.014		0.272		0.045	−0.007	−0.25	307.15			0.22	306.80
199	293	0.250		−0.007	0.016		0.272		0.037	−0.011	−0.57	314.90			−0.11	314.56
200	294	0.250		0.000	0.017		0.272		0.029	−0.014	−0.54	321.43			−0.05	321.14
201	295	0.267		0.020	0.019		0.293		0.009	−0.022	−1.06	329.12			−0.48	328.94
202	296	0.267		0.020	0.023		0.293		0.010	−0.026	−1.12	335.70			−0.46	335.63
203	297	0.258		0.013	0.026		0.282		0.016	−0.027	−1.39	343.78			−0.74	343.73
204	298	0.250		0.000	0.030		0.273		0.030	−0.027	−1.41	350.55			−0.70	350.57

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 94$ (Pu)																
205	299	0.250		0.007	0.030		0.273		0.022	−0.029	−1.52	358.93			−0.81	358.98
206	300	0.225		−0.020	0.035		0.243		0.050	−0.027	−1.82	365.57			−1.06	365.70
207	301	0.200		−0.040	0.030		0.215		0.069	−0.018	−2.29	373.73			−1.60	373.82
208	302	0.200		−0.040	0.032		0.215		0.069	−0.020	−2.37	380.72			−1.61	380.90
209	303	0.200		−0.040	0.036		0.215		0.069	−0.024	−2.79	389.07			−1.97	389.34
210	304	0.200		−0.040	0.038		0.215		0.069	−0.026	−2.82	396.25			−1.92	396.64
211	305	0.192		−0.040	0.036		0.206		0.067	−0.025	−2.91	405.07			−2.09	405.40
212	306	0.192		−0.033	0.034		0.206		0.059	−0.025	−2.62	412.70			−1.87	413.00
213	307	0.192		−0.033	0.035		0.206		0.059	−0.026	−2.81	421.54			−2.02	421.91
214	308	0.192		−0.020	0.032		0.207		0.043	−0.026	−2.42	429.41			−1.74	429.71
215	309	0.192		−0.013	0.030		0.207		0.034	−0.026	−2.55	438.44			−1.94	438.70
216	310	0.192		−0.007	0.029		0.207		0.027	−0.026	−2.33	446.28			−1.73	446.56
217	311	0.183		−0.007	0.029		0.198		0.025	−0.026	−2.52	455.37			−1.94	455.67
218	312	0.183		0.000	0.033		0.198		0.017	−0.032	−2.52	463.11			−1.84	463.56
$Z = 95$ (Am)																
117	212	0.150		0.027	−0.008		0.162		−0.024	0.004	0.49	59.43			0.43	62.57
118	213	0.150		0.027	−0.012		0.162		−0.024	0.008	0.30	56.16			0.25	59.17
119	214	0.125		0.033	−0.012		0.135		−0.034	0.007	0.29	54.83			0.25	57.72
120	215	−0.150		0.020	−0.017		−0.156		−0.013	0.019	−0.09	51.72			−0.13	54.48
121	216	−0.125		0.013	−0.008		−0.130		−0.008	0.009	−0.39	50.44			−0.42	53.08
122	217	−0.100		0.013	0.000		−0.105		−0.011	0.001	−0.51	47.94			−0.52	50.47
123	218	−0.083		0.020	0.004		−0.087		−0.020	−0.002	−0.93	46.86			−0.94	49.28
124	219	−0.067		0.027	0.009		−0.070		−0.030	−0.006	−1.18	44.56			−1.18	46.87
125	220	−0.025		0.000	−0.001		−0.026		0.000	0.001	−1.69	43.72			−1.70	45.92
126	221	0.008	0.025	0.000	0.000	−0.001	0.009	−0.034	0.000	0.000	−1.88	41.81			−1.88	43.89
127	222	−0.033	0.013	−0.007	0.000	0.001	−0.035	−0.017	0.009	0.000	−0.79	42.89			−0.79	44.87
128	223	−0.017	0.041	−0.007	0.000	−0.001	−0.017	−0.055	0.009	0.001	−0.19	42.08			−0.19	43.95
129	224	0.050		−0.020	−0.009		0.053		0.025	0.010	1.05	43.62			1.06	45.39
130	225	0.117	0.080	−0.053	0.009	−0.011	0.127	−0.111	0.073	0.005	0.22	41.70			0.26	43.40
131	226	0.150	0.063	−0.067	0.013	−0.004	0.162	−0.087	0.094	0.005	0.38	42.45			0.43	44.07
132	227	0.175		−0.067	0.000		0.189		0.097	0.018	0.49	41.77			0.55	43.30
133	228	0.175		−0.073	0.000		0.190		0.104	0.019	0.16	42.34			0.23	43.78
134	229	0.183		−0.073	0.003		0.198		0.106	0.017	−0.02	41.67			0.07	43.03
135	230	0.183		−0.080	0.003		0.198		0.115	0.019	−0.38	42.49			−0.28	43.77
136	231	0.192		−0.073	0.008		0.208		0.108	0.013	−0.51	42.15			−0.41	43.35
137	232	0.192		−0.080	0.010		0.208		0.117	0.013	−0.87	43.26			−0.75	44.38
138	233	0.192		−0.073	0.013		0.207		0.108	0.008	−0.98	43.23			−0.86	44.27
139	234	0.200		−0.073	0.018		0.216		0.109	0.004	−1.37	44.57			−1.25	45.53
140	235	0.200		−0.073	0.022		0.215		0.110	−0.001	−1.52	44.79			−1.37	45.69
141	236	0.200		−0.073	0.023		0.215		0.110	−0.002	−1.87	46.44			−1.72	47.26
142	237	0.200		−0.067	0.026		0.215		0.102	−0.007	−1.95	46.99			−1.79	47.75
143	238	0.200		−0.067	0.029		0.215		0.102	−0.010	−2.21	48.99	48.42	0.050	−2.05	49.68
144	239	0.200		−0.060	0.031		0.215		0.093	−0.014	−2.12	49.98	49.38	0.003	−1.96	50.60
145	240	0.208		−0.060	0.037		0.223		0.095	−0.019	−2.51	52.12	51.50	0.014	−2.31	52.69
146	241	0.208		−0.053	0.038		0.223		0.087	−0.022	−2.38	53.40	52.93	0.002	−2.17	53.92
147	242	0.208		−0.047	0.040		0.224		0.079	−0.026	−2.61	55.94	55.47	0.002	−2.41	56.39
148	243	0.208		−0.040	0.038		0.224		0.071	−0.026	−2.44	57.52	57.17	0.002	−2.24	57.90
149	244	0.208		−0.040	0.040		0.224		0.071	−0.028	−2.70	60.27	59.88	0.002	−2.50	60.60
150	245	0.208		−0.033	0.038		0.224		0.062	−0.028	−2.53	62.11	61.89	0.003	−2.32	62.38
151	246	0.217		−0.020	0.039		0.235		0.048	−0.032	−2.93	64.96	64.99	0.018	−2.73	65.17
152	247	0.217		−0.013	0.040		0.235		0.040	−0.034	−2.66	67.14			−2.43	67.32
153	248	0.217		−0.013	0.036		0.235		0.039	−0.030	−2.57	70.72			−2.37	70.81
154	249	0.208		−0.013	0.031		0.225		0.037	−0.026	−1.88	73.55			−1.70	73.57
155	250	0.208		0.000	0.025		0.226		0.021	−0.023	−1.65	77.50			−1.51	77.43
156	251	0.200		0.000	0.022		0.217		0.019	−0.020	−1.13	80.40			−1.00	80.27
157	252	0.200		0.007	0.017		0.217		0.010	−0.017	−1.13	84.34			−1.03	84.14
158	253	0.200		0.013	0.014		0.217		0.003	−0.016	−0.85	87.23			−0.75	86.98

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 95 (Am)																
159	254	0.200		0.020	0.009		0.218		−0.006	−0.012	−1.00	91.24			−0.91	90.94
160	255	0.200		0.027	0.007		0.218		−0.015	−0.012	−0.86	94.21			−0.75	93.89
161	256	0.200		0.040	0.003		0.219		−0.031	−0.011	−1.05	98.40			−0.93	98.05
162	257	0.200		0.047	0.002		0.219		−0.039	−0.012	−0.92	101.58			−0.76	101.22
163	258	0.200		0.053	−0.005		0.219		−0.047	−0.006	−0.93	106.16			−0.76	105.78
164	259	0.192		0.053	−0.009		0.210		−0.049	−0.002	−0.47	109.88			−0.29	109.47
165	260	0.175		0.047	−0.004		0.191		−0.044	−0.005	−0.39	114.76			−0.24	114.29
166	261	0.150		0.020	0.006		0.162		−0.014	−0.009	0.30	118.92			0.38	118.35
167	262	0.150		0.020	0.006		0.162		−0.014	−0.009	0.09	123.71			0.17	123.11
168	263	0.133		0.007	0.009		0.143		−0.001	−0.010	0.21	127.51			0.27	126.86
169	264	0.117		0.000	0.013		0.125		0.006	−0.013	0.14	132.64			0.20	131.97
170	265	0.100		−0.007	0.016		0.107		0.013	−0.015	0.57	136.95			0.64	136.26
171	266	0.100		0.000	0.010		0.107		0.005	−0.010	0.10	141.88			0.15	141.14
172	267	−0.142		−0.013	−0.016		−0.147		0.024	0.013	−0.55	145.30			−0.44	144.61
173	268	0.100		0.020	−0.004		0.107		−0.020	0.002	−0.34	151.10			−0.29	150.32
174	269	0.092		0.027	−0.010		0.099		−0.029	0.007	−0.28	155.43			−0.21	154.66
175	270	0.092		0.033	−0.016		0.099		−0.037	0.012	−0.76	160.72			−0.64	159.98
176	271	−0.100		0.013	−0.003		−0.105		−0.011	0.004	−1.20	164.74			−1.16	163.90
177	272	−0.100		0.020	−0.002		−0.105		−0.019	0.004	−1.64	170.26			−1.59	169.42
178	273	−0.092		0.020	−0.009		−0.096		−0.019	0.011	−1.52	175.02			−1.45	174.19
179	274	−0.050		0.007	−0.007		−0.053		−0.007	0.007	−1.53	181.15			−1.51	180.26
180	275	−0.050		0.013	−0.001		−0.053		−0.014	0.002	−1.49	186.03			−1.47	185.12
181	276	−0.033		0.013	0.001		−0.035		−0.015	0.000	−1.82	192.01			−1.81	191.09
182	277	−0.017		0.013	0.001		−0.018		−0.015	−0.001	−1.62	197.22			−1.61	196.29
183	278	0.000		0.007	0.000		0.000		−0.008	0.000	−1.82	203.51			−1.82	202.56
184	279	0.000	0.023	0.007	0.000	0.000	0.000	−0.031	−0.008	0.000	−1.34	209.18			−1.32	208.24
185	280	0.000	0.054	0.007	0.000	0.000	0.001	−0.072	−0.007	0.002	−0.70	216.47			−0.61	215.60
186	281	0.000	0.066	0.007	0.000	0.000	0.002	−0.088	−0.007	0.003	−0.10	222.43			0.04	221.61
187	282	0.367		0.067	0.014		0.413		−0.018	−0.034	−0.86	228.50			0.00	228.40
188	283	0.367		0.073	0.012		0.414		−0.025	−0.035	−0.71	234.18			0.21	234.13
189	284	0.367		0.080	0.011		0.415		−0.034	−0.037	−0.96	240.91			0.00	240.92
190	285	0.367		0.080	0.011		0.415		−0.034	−0.037	−0.85	246.72			0.15	246.77
191	286	0.367		0.087	0.010		0.416		−0.042	−0.039	−1.13	253.58			−0.08	253.69
192	287	0.233		−0.040	0.003		0.253		0.074	0.012	0.20	260.77			0.70	260.33
193	288	0.358		0.087	0.006		0.405		−0.046	−0.035	−1.11	266.77			−0.09	266.86
194	289	0.350		0.087	0.002		0.396		−0.049	−0.031	−0.63	273.27			0.37	273.35
195	290	0.350		0.087	−0.002		0.395		−0.050	−0.028	−0.84	280.52			0.12	280.57
196	291	0.233		−0.033	0.010		0.252		0.065	0.003	−0.38	287.16			0.09	286.73
197	292	0.233		−0.027	0.010		0.252		0.058	0.001	−0.65	294.50			−0.22	294.04
198	293	0.242		−0.020	0.015		0.263		0.051	−0.006	−0.68	300.81			−0.22	300.39
199	294	0.250		−0.007	0.017		0.272		0.037	−0.012	−1.00	308.24			−0.55	307.83
200	295	0.250		0.000	0.019		0.272		0.029	−0.016	−0.99	314.75			−0.51	314.37
201	296	0.250		0.000	0.023		0.272		0.030	−0.020	−1.43	322.21			−0.91	321.90
202	297	0.267		0.020	0.025		0.293		0.010	−0.028	−1.57	328.71			−0.91	328.56
203	298	0.250		0.007	0.027		0.273		0.022	−0.026	−1.80	336.52			−1.19	336.34
204	299	0.250		0.000	0.031		0.273		0.031	−0.028	−1.86	343.25			−1.17	343.17
205	300	0.233		−0.013	0.033		0.253		0.043	−0.027	−2.20	351.10			−1.51	351.04
206	301	0.217		−0.027	0.034		0.234		0.056	−0.025	−2.16	358.07			−1.44	358.06
207	302	0.200		−0.040	0.030		0.215		0.069	−0.018	−2.57	365.99			−1.89	365.97
208	303	0.200		−0.040	0.033		0.215		0.069	−0.021	−2.64	372.99			−1.90	373.05
209	304	0.200		−0.040	0.036		0.215		0.069	−0.024	−3.06	381.04			−2.25	381.19
210	305	0.200		−0.040	0.038		0.215		0.069	−0.026	−3.08	388.23			−2.21	388.47
211	306	0.192		−0.040	0.036		0.206		0.067	−0.025	−3.16	396.75			−2.36	396.95
212	307	0.192		−0.033	0.034		0.206		0.059	−0.025	−2.86	404.39			−2.13	404.55
213	308	0.192		−0.033	0.035		0.206		0.059	−0.026	−3.03	412.96			−2.28	413.17
214	309	0.192		−0.020	0.032		0.207		0.043	−0.026	−2.70	420.77			−2.06	420.90
215	310	0.192		−0.020	0.031		0.207		0.043	−0.025	−2.92	429.41			−2.29	429.57

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 95 (Am)																
216	311	0.192		−0.007	0.027		0.207		0.026	−0.024	−2.57	437.38			−2.03	437.48
217	312	0.192		−0.007	0.029		0.207		0.027	−0.026	−2.97	445.97			−2.38	446.15
218	313	0.192		0.000	0.032		0.208		0.018	−0.031	−2.95	453.73			−2.27	454.03
219	314	0.183		0.000	0.037		0.198		0.017	−0.036	−3.21	462.59			−2.44	463.02
220	315	0.183		0.000	0.041		0.198		0.018	−0.040	−3.19	470.48			−2.27	471.10
Z = 96 (Cm)																
119	215	0.133		0.033	−0.013		0.144		−0.033	0.008	0.08	62.34			0.05	65.57
120	216	−0.150		0.020	−0.016		−0.156		−0.013	0.018	0.02	59.13			−0.02	62.22
121	217	−0.133		0.020	−0.007		−0.139		−0.016	0.009	−0.29	57.80			−0.32	60.77
122	218	−0.100		0.020	0.001		−0.105		−0.019	0.001	−0.42	54.87			−0.44	57.72
123	219	−0.083		0.020	0.004		−0.087		−0.020	−0.002	−0.83	53.77			−0.84	56.50
124	220	−0.067		0.027	0.009		−0.070		−0.030	−0.006	−1.09	51.05			−1.09	53.67
125	221	−0.017		0.000	0.000		−0.018		0.000	0.000	−1.67	50.10			−1.67	52.60
126	222	0.000		0.000	0.000		0.000		0.000	0.000	−1.76	47.88			−1.76	50.26
127	223	−0.025		−0.007	0.001		−0.026		0.008	−0.001	−0.78	48.81			−0.78	51.07
128	224	0.008	0.054	0.000	0.000	0.000	0.010	−0.073	0.001	0.002	−0.36	47.42			−0.35	49.58
129	225	0.050		−0.020	−0.009		0.053		0.025	0.010	1.18	49.22			1.19	51.27
130	226	0.100	0.090	−0.040	0.005	−0.014	0.110	−0.125	0.056	0.007	0.37	46.91			0.41	48.89
131	227	0.133	0.074	−0.060	0.012	−0.006	0.144	−0.102	0.083	0.004	0.66	47.76			0.70	49.64
132	228	0.175		−0.060	0.000		0.189		0.088	0.016	0.71	46.63			0.76	48.41
133	229	0.175		−0.067	0.001		0.189		0.097	0.017	0.42	47.20			0.48	48.88
134	230	0.183		−0.067	0.004		0.198		0.098	0.014	0.24	46.13			0.31	47.73
135	231	0.183		−0.073	0.004		0.198		0.106	0.016	−0.10	46.93			−0.02	48.45
136	232	0.192		−0.067	0.009		0.207		0.100	0.010	−0.27	46.18			−0.17	47.60
137	233	0.192		−0.073	0.011		0.207		0.108	0.010	−0.62	47.25			−0.52	48.59
138	234	0.200		−0.067	0.017		0.216		0.102	0.003	−0.75	46.82			−0.63	48.08
139	235	0.200		−0.067	0.019		0.215		0.102	0.001	−1.15	48.12			−1.04	49.29
140	236	0.200		−0.067	0.022		0.215		0.102	−0.002	−1.33	47.92			−1.19	49.03
141	237	0.200		−0.067	0.024		0.215		0.102	−0.005	−1.66	49.55			−1.53	50.58
142	238	0.200		−0.060	0.026		0.215		0.093	−0.009	−1.78	49.69	49.38	0.040	−1.64	50.64
143	239	0.200		−0.060	0.030		0.215		0.093	−0.013	−2.06	51.63			−1.92	52.51
144	240	0.208		−0.053	0.034		0.224		0.087	−0.018	−2.18	52.04	51.70	0.004	−2.02	52.86
145	241	0.208		−0.053	0.038		0.223		0.087	−0.022	−2.47	54.24	53.70	0.006	−2.29	55.00
146	242	0.208		−0.047	0.038		0.224		0.079	−0.024	−2.38	55.12	54.80	0.002	−2.19	55.82
147	243	0.217		−0.040	0.043		0.234		0.073	−0.030	−2.84	57.39	57.18	0.002	−2.63	58.03
148	244	0.217		−0.040	0.042		0.234		0.073	−0.029	−2.76	58.52	58.45	0.002	−2.53	59.11
149	245	0.217		−0.033	0.042		0.234		0.064	−0.031	−3.05	61.21	61.00	0.002	−2.84	61.72
150	246	0.217		−0.027	0.041		0.234		0.057	−0.032	−2.96	62.59	62.61	0.003	−2.74	63.05
151	247	0.217		−0.013	0.040		0.235		0.040	−0.034	−3.17	65.61	65.53	0.005	−2.97	65.98
152	248	0.217		−0.013	0.042		0.235		0.040	−0.036	−3.00	67.32	67.39	0.005	−2.77	67.67
153	249	0.217		−0.007	0.037		0.235		0.032	−0.033	−2.89	70.89	70.75	0.005	−2.69	71.14
154	250	0.208		−0.007	0.033		0.225		0.030	−0.029	−2.22	73.35	72.98	0.011	−2.04	73.52
155	251	0.208		0.000	0.029		0.226		0.021	−0.027	−2.02	77.24	76.64	0.023	−1.86	77.33
156	252	0.208		0.007	0.024		0.226		0.012	−0.024	−1.62	79.65			−1.47	79.68
157	253	0.200		0.013	0.019		0.217		0.003	−0.021	−1.45	83.75			−1.33	83.69
158	254	0.200		0.013	0.016		0.217		0.003	−0.018	−1.19	86.25			−1.07	86.15
159	255	0.200		0.027	0.011		0.218		−0.015	−0.016	−1.33	90.25			−1.22	90.09
160	256	0.200		0.033	0.009		0.218		−0.022	−0.015	−1.20	92.85			−1.07	92.67
161	257	0.200		0.040	0.005		0.219		−0.031	−0.013	−1.42	96.99			−1.29	96.76
162	258	0.200		0.047	0.004		0.219		−0.039	−0.014	−1.29	99.82			−1.13	99.58
163	259	0.200		0.053	−0.003		0.219		−0.047	−0.008	−1.30	104.37			−1.13	104.10
164	260	0.192		0.053	−0.007		0.210		−0.049	−0.004	−0.81	107.78			−0.63	107.47
165	261	0.183		0.047	−0.004		0.200		−0.043	−0.005	−0.72	112.65			−0.57	112.27
166	262	0.158		0.033	0.003		0.172		−0.029	−0.008	−0.23	116.26			−0.13	115.81
167	263	0.150		0.027	0.005		0.163		−0.023	−0.009	−0.06	121.41			0.03	120.91
168	264	0.142		0.013	0.009		0.153		−0.007	−0.011	0.04	124.85			0.12	124.30
169	265	0.125		0.007	0.014		0.134		−0.001	−0.015	−0.24	129.74			−0.17	129.16

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 96 (Cm)																
170	266	0.100		0.000	0.015		0.107		0.005	−0.015	0.50	134.02			0.57	133.40
171	267	0.100		0.000	0.011		0.107		0.005	−0.011	0.06	138.96			0.11	138.29
172	268	−0.142		−0.013	−0.016		−0.147		0.024	0.013	−0.44	142.19			−0.33	141.57
173	269	0.100		0.020	−0.003		0.107		−0.020	0.001	−0.38	147.82			−0.33	147.11
174	270	0.092		0.027	−0.010		0.099		−0.029	0.007	−0.31	151.82			−0.24	151.11
175	271	0.092		0.033	−0.016		0.099		−0.037	0.012	−0.79	157.10			−0.67	156.41
176	272	−0.100		0.013	−0.003		−0.105		−0.011	0.004	−1.10	160.93			−1.05	160.14
177	273	−0.100		0.020	−0.002		−0.105		−0.019	0.004	−1.52	166.43			−1.47	165.64
178	274	−0.092		0.020	−0.009		−0.096		−0.019	0.011	−1.41	170.87			−1.34	170.08
179	275	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−1.47	176.93			−1.45	176.07
180	276	−0.042		0.013	0.000		−0.044		−0.014	0.001	−1.41	181.49			−1.40	180.61
181	277	−0.025		0.013	0.003		−0.026		−0.015	−0.002	−1.73	187.47			−1.72	186.57
182	278	−0.008		0.007	0.000		−0.008		−0.008	0.000	−1.53	192.36			−1.53	191.44
183	279	0.000		0.000	−0.001		0.000		0.000	0.001	−1.71	198.65			−1.71	197.71
184	280	0.000		0.000	−0.001		0.000		0.000	0.001	−1.23	203.99			−1.23	203.05
185	281	0.000	0.058	0.007	0.000	0.000	0.002	−0.078	−0.007	0.002	−0.53	211.33			−0.42	210.49
186	282	0.000	0.073	0.000	0.000	−0.001	0.002	−0.098	0.002	0.003	0.01	216.91			0.18	216.13
187	283	0.000	0.091	0.007	0.000	0.000	0.004	−0.122	−0.005	0.005	0.44	224.15			0.70	223.45
188	284	0.000	0.099	0.000	0.000	−0.001	0.005	−0.133	0.004	0.006	0.96	229.88			1.28	229.24
189	285	0.225		−0.047	0.004		0.244		0.081	0.013	0.52	236.41			1.02	235.95
190	286	0.225		−0.040	0.001		0.244		0.072	0.013	0.43	241.71			0.90	241.21
191	287	0.225		−0.040	0.000		0.244		0.072	0.014	0.12	248.53			0.59	248.03
192	288	0.225		−0.040	0.001		0.244		0.072	0.013	0.09	254.05			0.57	253.57
193	289	0.225		−0.040	0.002		0.244		0.072	0.012	−0.18	261.06			0.29	260.58
194	290	0.225		−0.040	0.005		0.244		0.072	0.009	−0.19	266.77			0.30	266.30
195	291	0.225		−0.033	0.005		0.244		0.063	0.007	−0.43	273.98			0.00	273.46
196	292	0.225		−0.033	0.008		0.244		0.063	0.004	−0.43	279.85			0.02	279.35
197	293	0.225		−0.033	0.011		0.243		0.064	0.001	−0.73	287.15			−0.28	286.66
198	294	0.233		−0.027	0.015		0.252		0.058	−0.004	−0.75	293.15			−0.28	292.69
199	295	0.250		−0.007	0.019		0.272		0.038	−0.014	−1.11	300.55			−0.64	300.10
200	296	0.250		0.000	0.021		0.272		0.029	−0.018	−1.11	306.72			−0.61	306.32
201	297	0.250		0.007	0.023		0.273		0.021	−0.022	−1.48	314.25			−0.95	313.89
202	298	0.258		0.020	0.025		0.283		0.008	−0.028	−1.50	320.56			−0.86	320.33
203	299	0.250		0.007	0.030		0.273		0.022	−0.029	−1.97	328.13			−1.32	327.92
204	300	0.250		0.007	0.031		0.273		0.022	−0.030	−1.91	334.68			−1.21	334.53
205	301	0.217		−0.027	0.032		0.234		0.056	−0.023	−2.24	342.54			−1.59	342.36
206	302	0.208		−0.033	0.032		0.224		0.062	−0.022	−2.18	349.22			−1.50	349.09
207	303	0.200		−0.040	0.033		0.215		0.069	−0.021	−2.58	357.15			−1.86	357.08
208	304	0.200		−0.040	0.036		0.215		0.069	−0.024	−2.66	363.84			−1.88	363.85
209	305	0.200		−0.040	0.039		0.215		0.069	−0.027	−3.08	371.88			−2.22	371.99
210	306	0.200		−0.040	0.040		0.215		0.069	−0.028	−3.09	378.78			−2.19	378.96
211	307	0.192		−0.040	0.038		0.206		0.068	−0.027	−3.17	387.30			−2.34	387.44
212	308	0.192		−0.033	0.036		0.206		0.059	−0.027	−2.91	394.61			−2.13	394.71
213	309	0.192		−0.033	0.037		0.206		0.059	−0.028	−3.08	403.17			−2.29	403.32
214	310	0.192		−0.020	0.034		0.207		0.043	−0.028	−2.77	410.67			−2.08	410.74
215	311	0.192		−0.020	0.034		0.207		0.043	−0.028	−3.00	419.30			−2.32	419.39
216	312	0.192		−0.013	0.032		0.207		0.034	−0.028	−2.79	426.83			−2.15	426.91
217	313	0.192		−0.007	0.032		0.208		0.027	−0.029	−3.12	435.49			−2.49	435.59
218	314	0.192		0.000	0.034		0.208		0.019	−0.033	−3.13	442.94			−2.41	443.16
219	315	0.183		0.000	0.039		0.198		0.017	−0.038	−3.36	451.83			−2.54	452.17
220	316	0.183		0.000	0.043		0.198		0.018	−0.042	−3.33	459.44			−2.36	459.97
221	317	0.183		0.007	0.038		0.199		0.009	−0.038	−3.55	468.46			−2.70	468.90
222	318	0.183		0.013	0.033		0.199		0.001	−0.034	−3.24	476.48			−2.50	476.85
Z = 97 (Bk)																
121	218	−0.133		0.020	−0.008		−0.139		−0.016	0.010	−0.16	67.33			−0.20	70.63
122	219	−0.100		0.020	0.001		−0.105		−0.019	0.001	−0.26	64.39			−0.28	67.57
123	220	−0.092		0.020	0.004		−0.096		−0.020	−0.002	−0.65	62.90			−0.67	65.96

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 97 (Bk)																
124	221	−0.067		0.027	0.009		−0.070		−0.030	−0.006	−0.83	60.21			−0.84	63.15
125	222	−0.025		0.007	0.000		−0.026		−0.008	0.000	−1.27	59.00			−1.28	61.82
126	223	0.008	0.030	0.000	0.000	−0.001	0.009	−0.040	0.000	0.001	−1.47	56.63			−1.48	59.32
127	224	−0.033		−0.007	0.000		−0.035		0.009	0.000	−0.38	57.27			−0.38	59.84
128	225	0.017	0.063	0.000	0.000	−0.001	0.020	−0.085	0.002	0.003	−0.25	55.55			−0.25	58.01
129	226	0.050		−0.020	−0.009		0.053		0.025	0.010	1.35	57.01			1.34	59.35
130	227	0.225		−0.040	0.005		0.244		0.072	0.009	0.84	54.97			0.82	57.18
131	228	0.225		−0.040	0.004		0.244		0.072	0.010	0.62	54.92			0.60	57.01
132	229	0.208		−0.047	0.006		0.225		0.077	0.009	0.47	53.54			0.47	55.55
133	230	0.183		−0.060	0.004		0.198		0.089	0.012	0.28	53.82			0.30	55.73
134	231	0.192		−0.060	0.008		0.207		0.091	0.009	0.08	52.70			0.12	54.53
135	232	0.192		−0.067	0.009		0.207		0.100	0.010	−0.24	53.13			−0.20	54.87
136	233	0.200		−0.060	0.014		0.216		0.093	0.004	−0.39	52.36			−0.34	54.00
137	234	0.200		−0.060	0.015		0.216		0.093	0.003	−0.75	53.04			−0.70	54.58
138	235	0.200		−0.060	0.019		0.215		0.093	−0.001	−0.92	52.53			−0.85	54.00
139	236	0.200		−0.060	0.020		0.215		0.093	−0.002	−1.32	53.45			−1.25	54.82
140	237	0.200		−0.060	0.024		0.215		0.093	−0.007	−1.52	53.19			−1.43	54.49
141	238	0.200		−0.060	0.026		0.215		0.093	−0.009	−1.85	54.45			−1.75	55.67
142	239	0.200		−0.060	0.029		0.215		0.093	−0.012	−2.03	54.49			−1.91	55.64
143	240	0.208		−0.053	0.033		0.224		0.086	−0.017	−2.48	55.89			−2.37	56.96
144	241	0.208		−0.047	0.035		0.224		0.079	−0.021	−2.48	56.39			−2.35	57.39
145	242	0.208		−0.047	0.039		0.224		0.079	−0.025	−2.79	58.19			−2.65	59.12
146	243	0.217		−0.040	0.042		0.234		0.073	−0.029	−2.94	58.80	58.68	0.005	−2.77	59.68
147	244	0.217		−0.040	0.045		0.234		0.073	−0.032	−3.27	60.83	60.70	0.050	−3.09	61.65
148	245	0.217		−0.033	0.043		0.234		0.064	−0.032	−3.21	61.91	61.81	0.002	−3.02	62.66
149	246	0.217		−0.027	0.043		0.234		0.057	−0.034	−3.52	64.21			−3.34	64.88
150	247	0.217		−0.020	0.041		0.235		0.048	−0.034	−3.46	65.54	65.48	0.006	−3.27	66.15
151	248	0.217		−0.013	0.041		0.235		0.040	−0.035	−3.71	68.15	68.11	0.020	−3.53	68.68
152	249	0.217		−0.013	0.043		0.235		0.040	−0.037	−3.55	69.82	69.84	0.003	−3.33	70.32
153	250	0.217		−0.007	0.038		0.235		0.032	−0.034	−3.45	73.02	72.95	0.006	−3.26	73.43
154	251	0.217		−0.007	0.036		0.235		0.032	−0.032	−3.03	75.19	75.22	0.011	−2.84	75.54
155	252	0.208		0.000	0.031		0.226		0.021	−0.029	−2.55	79.00			−2.41	79.25
156	253	0.208		0.007	0.026		0.226		0.012	−0.026	−2.17	81.38			−2.03	81.56
157	254	0.200		0.013	0.021		0.217		0.003	−0.023	−1.95	85.15			−1.85	85.25
158	255	0.200		0.013	0.019		0.217		0.003	−0.021	−1.69	87.64			−1.58	87.68
159	256	0.200		0.027	0.013		0.218		−0.014	−0.018	−1.82	91.29			−1.72	91.27
160	257	0.200		0.033	0.011		0.218		−0.022	−0.017	−1.69	93.88			−1.57	93.82
161	258	0.200		0.040	0.008		0.219		−0.030	−0.016	−1.89	97.68			−1.77	97.57
162	259	0.200		0.047	0.006		0.219		−0.039	−0.016	−1.76	100.49			−1.61	100.36
163	260	0.200		0.053	−0.001		0.220		−0.047	−0.010	−1.76	104.70			−1.61	104.53
164	261	0.200		0.053	−0.006		0.219		−0.047	−0.005	−1.27	108.08			−1.11	107.88
165	262	0.183		0.047	−0.002		0.200		−0.043	−0.007	−1.11	112.67			−0.98	112.40
166	263	0.167		0.033	0.003		0.182		−0.028	−0.009	−0.67	116.21			−0.57	115.87
167	264	0.150		0.027	0.006		0.163		−0.023	−0.010	−0.35	121.17			−0.27	120.77
168	265	0.142		0.013	0.009		0.153		−0.007	−0.011	−0.21	124.63			−0.14	124.18
169	266	0.133		0.007	0.014		0.143		0.000	−0.015	−0.47	129.20			−0.40	128.72
170	267	0.108		0.000	0.016		0.116		0.006	−0.016	0.22	133.41			0.28	132.88
171	268	0.100		0.000	0.010		0.107		0.005	−0.010	0.00	138.23			0.04	137.64
172	269	−0.142		−0.013	−0.016		−0.147		0.024	0.013	−0.45	141.51			−0.34	140.95
173	270	0.100		0.020	−0.003		0.107		−0.020	0.001	−0.44	146.74			−0.40	146.10
174	271	0.100		0.027	−0.010		0.107		−0.029	0.007	−0.40	150.70			−0.32	150.06
175	272	0.092		0.033	−0.016		0.099		−0.037	0.012	−0.81	155.71			−0.70	155.08
176	273	−0.100		0.013	−0.003		−0.105		−0.011	0.004	−1.03	159.60			−1.00	158.87
177	274	−0.100		0.020	−0.003		−0.105		−0.019	0.005	−1.46	164.78			−1.41	164.04
178	275	−0.092		0.020	−0.010		−0.096		−0.019	0.012	−1.31	169.23			−1.24	168.49
179	276	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−1.29	175.04			−1.28	174.22
180	277	−0.050		0.013	0.000		−0.053		−0.014	0.001	−1.23	179.59			−1.21	178.75

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 97 (Bk)																
181	278	−0.033		0.013	0.003		−0.035		−0.015	−0.002	−1.52	185.27			−1.50	184.41
182	279	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−1.26	190.20			−1.26	189.31
183	280	0.000	0.013	0.000	0.000	0.000	0.000	−0.017	0.000	0.000	−1.39	196.21			−1.39	195.32
184	281	0.000	0.032	0.000	0.000	−0.001	0.000	−0.043	0.000	0.001	−0.90	201.56			−0.87	200.67
185	282	0.000	0.067	0.007	0.000	0.000	0.002	−0.090	−0.006	0.003	−0.38	208.40			−0.25	207.60
186	283	0.000	0.078	0.000	0.000	−0.001	0.003	−0.105	0.003	0.004	0.13	213.93			0.31	213.17
187	284	0.000	0.094	0.007	0.000	0.000	0.004	−0.126	−0.005	0.006	0.47	220.76			0.73	220.07
188	285	0.233		−0.040	0.010		0.252		0.074	0.005	0.56	226.05			1.00	225.53
189	286	0.233		−0.040	0.011		0.252		0.074	0.004	0.26	232.40			0.69	231.87
190	287	0.225		−0.040	0.006		0.244		0.072	0.008	0.18	237.69			0.61	237.15
191	288	0.225		−0.040	0.004		0.244		0.072	0.010	−0.14	244.19			0.29	243.65
192	289	0.225		−0.040	0.005		0.244		0.072	0.009	−0.16	249.70			0.28	249.18
193	290	0.225		−0.033	0.002		0.244		0.063	0.010	−0.44	256.40			−0.05	255.82
194	291	0.225		−0.033	0.007		0.244		0.063	0.005	−0.45	262.09			−0.04	261.53
195	292	0.225		−0.033	0.008		0.244		0.063	0.004	−0.72	268.96			−0.32	268.39
196	293	0.225		−0.033	0.012		0.243		0.064	0.000	−0.73	274.81			−0.30	274.27
197	294	0.233		−0.027	0.015		0.252		0.058	−0.004	−1.09	281.74			−0.67	281.20
198	295	0.233		−0.020	0.016		0.253		0.050	−0.008	−1.06	287.79			−0.64	287.25
199	296	0.242		−0.013	0.021		0.263		0.043	−0.014	−1.50	294.79			−1.05	294.30
200	297	0.250		0.000	0.023		0.272		0.030	−0.020	−1.57	300.89			−1.07	300.45
201	298	0.250		0.007	0.024		0.273		0.021	−0.023	−1.95	308.11			−1.43	307.70
202	299	0.250		0.013	0.027		0.273		0.014	−0.028	−1.93	314.45			−1.33	314.13
203	300	0.250		0.007	0.031		0.273		0.022	−0.030	−2.44	321.69			−1.80	321.41
204	301	0.250		0.007	0.032		0.273		0.022	−0.031	−2.38	328.22			−1.68	328.02
205	302	0.225		−0.020	0.037		0.243		0.050	−0.029	−2.74	335.75			−2.02	335.58
206	303	0.208		−0.027	0.035		0.224		0.054	−0.026	−2.44	342.67			−1.77	342.46
207	304	0.200		−0.033	0.035		0.215		0.060	−0.025	−2.77	350.36			−2.08	350.19
208	305	0.200		−0.033	0.038		0.215		0.060	−0.028	−2.88	357.02			−2.12	356.94
209	306	0.200		−0.033	0.041		0.215		0.061	−0.031	−3.31	364.75			−2.49	364.75
210	307	0.200		−0.033	0.042		0.215		0.061	−0.032	−3.32	371.65			−2.46	371.71
211	308	0.200		−0.033	0.041		0.215		0.061	−0.031	−3.58	379.69			−2.72	379.77
212	309	0.200		−0.027	0.040		0.215		0.053	−0.032	−3.35	386.97			−2.53	387.03
213	310	0.192		−0.027	0.038		0.207		0.052	−0.030	−3.38	395.38			−2.61	395.41
214	311	0.192		−0.020	0.037		0.207		0.043	−0.031	−3.13	402.82			−2.40	402.83
215	312	0.192		−0.013	0.034		0.207		0.034	−0.030	−3.30	411.21			−2.65	411.17
216	313	0.192		−0.007	0.032		0.208		0.027	−0.029	−3.11	418.72			−2.49	418.68
217	314	0.192		−0.007	0.034		0.208		0.027	−0.031	−3.52	427.02			−2.84	427.05
218	315	0.192		0.000	0.037		0.208		0.019	−0.036	−3.52	434.47			−2.76	434.61
219	316	0.183		0.000	0.041		0.198		0.018	−0.040	−3.70	443.11			−2.86	443.37
220	317	0.183		0.000	0.045		0.198		0.018	−0.044	−3.67	450.73			−2.67	451.17
221	318	0.183		0.007	0.040		0.199		0.009	−0.040	−3.89	459.46			−3.02	459.80
222	319	0.183		0.013	0.034		0.199		0.001	−0.035	−3.61	467.46			−2.86	467.71
223	320	0.183		0.013	0.031		0.199		0.001	−0.033	−3.73	476.41			−3.06	476.61
224	321	0.183		0.020	0.025		0.199		−0.008	−0.028	−3.37	484.61			−2.80	484.75
Z = 98 (Cf)																
123	221	−0.092		0.027	0.006		−0.096		−0.028	−0.003	−0.73	70.47			−0.74	73.87
124	222	−0.067		0.027	0.009		−0.070		−0.030	−0.006	−0.93	67.36			−0.94	70.63
125	223	−0.025		0.000	0.000		−0.026		0.000	0.000	−1.37	66.11			−1.37	69.25
126	224	0.000	0.021	0.000	0.000	0.000	0.000	−0.028	0.000	0.000	−1.52	63.38			−1.52	66.40
127	225	−0.025	0.014	−0.007	0.000	0.001	−0.026	−0.019	0.009	0.000	−0.54	63.87			−0.54	66.76
128	226	0.008	0.057	0.000	0.000	0.000	0.010	−0.077	0.001	0.002	−0.23	61.92			−0.24	64.69
129	227	0.050		−0.020	−0.008		0.053		0.025	0.009	1.28	63.26			1.28	65.91
130	228	0.242		−0.027	0.006		0.263		0.059	0.005	0.86	60.91			0.83	63.41
131	229	0.233		−0.033	0.005		0.253		0.065	0.008	0.70	60.87			0.67	63.26
132	230	0.225		−0.040	0.009		0.243		0.072	0.005	0.61	59.17			0.61	61.47
133	231	0.225		−0.040	0.010		0.243		0.072	0.004	0.39	59.38			0.38	61.56
134	232	0.208		−0.047	0.011		0.225		0.078	0.004	0.24	57.92			0.26	60.01

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 98$ (Cf)																
135	233	0.192		−0.060	0.009		0.207		0.091	0.008	0.00	58.39			0.03	60.39
136	234	0.200		−0.053	0.014		0.216		0.084	0.002	−0.18	57.21			−0.14	59.11
137	235	0.200		−0.060	0.016		0.216		0.093	0.002	−0.53	57.85			−0.48	59.66
138	236	0.200		−0.053	0.019		0.215		0.084	−0.003	−0.70	56.97			−0.64	58.68
139	237	0.200		−0.060	0.022		0.215		0.093	−0.005	−1.11	57.84			−1.04	59.46
140	238	0.200		−0.053	0.025		0.215		0.084	−0.010	−1.32	57.20			−1.24	58.74
141	239	0.200		−0.060	0.028		0.215		0.093	−0.011	−1.65	58.42			−1.56	59.88
142	240	0.200		−0.053	0.029		0.215		0.085	−0.014	−1.86	58.05			−1.76	59.43
143	241	0.208		−0.047	0.034		0.224		0.079	−0.020	−2.34	59.39			−2.24	60.68
144	242	0.208		−0.047	0.037		0.224		0.079	−0.023	−2.40	59.44	59.32	0.040	−2.27	60.68
145	243	0.217		−0.040	0.041		0.234		0.073	−0.028	−2.92	61.01			−2.77	62.17
146	244	0.217		−0.040	0.044		0.234		0.073	−0.031	−2.94	61.37	61.46	0.005	−2.77	62.48
147	245	0.217		−0.033	0.045		0.234		0.065	−0.034	−3.27	63.37	63.38	0.006	−3.10	64.40
148	246	0.217		−0.027	0.043		0.234		0.057	−0.034	−3.25	64.04	64.09	0.002	−3.07	65.00
149	247	0.217		−0.027	0.045		0.234		0.057	−0.036	−3.61	66.26	66.13	0.008	−3.42	67.15
150	248	0.217		−0.013	0.041		0.235		0.040	−0.035	−3.57	67.21	67.24	0.004	−3.39	68.01
151	249	0.217		−0.007	0.042		0.235		0.033	−0.038	−3.87	69.74	69.72	0.002	−3.68	70.48
152	250	0.225		0.000	0.043		0.245		0.026	−0.041	−3.87	70.89	71.17	0.003	−3.65	71.59
153	251	0.217		0.000	0.039		0.236		0.024	−0.037	−3.65	74.18	74.13	0.005	−3.46	74.77
154	252	0.217		0.007	0.035		0.236		0.015	−0.035	−3.23	76.00	76.03	0.005	−3.04	76.52
155	253	0.208		0.007	0.031		0.226		0.013	−0.031	−2.77	79.76	79.29	0.007	−2.62	80.18
156	254	0.208		0.013	0.027		0.226		0.005	−0.028	−2.39	81.77	81.34	0.012	−2.24	82.12
157	255	0.208		0.020	0.022		0.227		−0.004	−0.025	−2.40	85.30			−2.27	85.57
158	256	0.200		0.020	0.019		0.218		−0.005	−0.022	−1.97	87.59			−1.85	87.80
159	257	0.200		0.033	0.014		0.219		−0.021	−0.020	−2.11	91.21			−2.00	91.35
160	258	0.200		0.040	0.011		0.219		−0.030	−0.019	−2.00	93.42			−1.86	93.53
161	259	0.200		0.047	0.007		0.219		−0.039	−0.017	−2.21	97.19			−2.07	97.25
162	260	0.200		0.053	0.006		0.220		−0.046	−0.017	−2.12	99.61			−1.95	99.64
163	261	0.200		0.053	−0.001		0.220		−0.047	−0.010	−2.16	103.76			−2.01	103.73
164	262	0.200		0.060	−0.007		0.220		−0.056	−0.006	−1.63	106.84			−1.44	106.79
165	263	0.183		0.053	−0.003		0.200		−0.050	−0.007	−1.42	111.44			−1.27	111.32
166	264	0.167		0.040	0.002		0.182		−0.036	−0.009	−0.94	114.69			−0.82	114.48
167	265	0.150		0.033	0.006		0.163		−0.030	−0.011	−0.58	119.66			−0.48	119.39
168	266	0.150		0.020	0.009		0.162		−0.014	−0.012	−0.49	122.72			−0.40	122.40
169	267	0.133		0.013	0.013		0.143		−0.007	−0.015	−0.66	127.37			−0.58	126.99
170	268	0.108		0.000	0.016		0.116		0.006	−0.016	0.04	131.25			0.11	130.83
171	269	0.100		0.000	0.011		0.107		0.005	−0.011	−0.19	136.03			−0.15	135.55
172	270	−0.142		−0.013	−0.016		−0.147		0.024	0.013	−0.45	139.16			−0.34	138.70
173	271	0.100		0.020	−0.002		0.107		−0.020	0.000	−0.62	144.20			−0.58	143.64
174	272	0.100		0.027	−0.009		0.108		−0.029	0.006	−0.58	147.82			−0.51	147.26
175	273	0.092		0.040	−0.015		0.099		−0.045	0.011	−0.96	152.84			−0.83	152.31
176	274	−0.100		0.013	−0.003		−0.105		−0.011	0.004	−1.08	156.51			−1.04	155.85
177	275	−0.100		0.020	−0.003		−0.105		−0.019	0.005	−1.49	161.68			−1.44	161.02
178	276	−0.092		0.020	−0.010		−0.096		−0.019	0.012	−1.35	165.79			−1.28	165.11
179	277	−0.050		0.007	−0.006		−0.053		−0.007	0.006	−1.39	171.53			−1.37	170.77
180	278	−0.050		0.013	0.000		−0.053		−0.014	0.001	−1.29	175.78			−1.28	175.01
181	279	−0.033		0.013	0.003		−0.035		−0.015	−0.002	−1.57	181.46			−1.56	180.66
182	280	−0.008		0.007	0.000		−0.008		−0.008	0.000	−1.31	186.07			−1.31	185.23
183	281	0.000		0.000	−0.001		0.000		0.000	0.001	−1.41	192.09			−1.41	191.24
184	282	0.000	0.031	0.000	0.000	−0.001	0.000	−0.042	0.000	0.001	−0.90	197.13			−0.88	196.29
185	283	0.000	0.068	0.007	0.000	0.000	0.002	−0.091	−0.006	0.003	−0.34	204.00			−0.21	203.24
186	284	0.000	0.078	0.000	0.000	−0.001	0.003	−0.105	0.003	0.004	0.16	209.20			0.33	208.47
187	285	0.000	0.092	0.000	0.000	−0.002	0.004	−0.124	0.004	0.005	0.41	215.92			0.65	215.26
188	286	0.233		−0.040	0.012		0.252		0.074	0.003	0.62	221.02			1.06	220.53
189	287	0.233		−0.040	0.013		0.252		0.074	0.002	0.31	227.35			0.75	226.85
190	288	0.233		−0.033	0.008		0.252		0.065	0.005	0.23	232.32			0.63	231.77
191	289	0.233		−0.033	0.006		0.253		0.065	0.007	−0.09	238.81			0.31	238.26

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 98$ (Cf)																
192	290	0.233		−0.033	0.009		0.252		0.065	0.004	−0.11	244.01			0.31	243.46
193	291	0.233		−0.027	0.005		0.253		0.057	0.006	−0.42	250.67			−0.04	250.08
194	292	0.233		−0.027	0.009		0.253		0.058	0.002	−0.43	256.04			−0.03	255.47
195	293	0.233		−0.027	0.012		0.252		0.058	−0.001	−0.72	262.88			−0.32	262.30
196	294	0.233		−0.027	0.015		0.252		0.058	−0.004	−0.74	268.42			−0.31	267.87
197	295	0.233		−0.020	0.015		0.253		0.049	−0.007	−1.03	275.40			−0.64	274.82
198	296	0.242		−0.013	0.020		0.263		0.043	−0.013	−1.13	281.01			−0.68	280.48
199	297	0.250		0.000	0.021		0.272		0.029	−0.018	−1.52	288.05			−1.06	287.54
200	298	0.250		0.000	0.025		0.273		0.030	−0.022	−1.65	293.80			−1.12	293.36
201	299	0.250		0.007	0.027		0.273		0.022	−0.026	−2.06	300.96			−1.51	300.55
202	300	0.250		0.013	0.029		0.273		0.015	−0.030	−2.06	306.98			−1.43	306.66
203	301	0.250		0.013	0.031		0.274		0.015	−0.032	−2.47	314.31			−1.80	314.02
204	302	0.250		0.013	0.032		0.274		0.015	−0.033	−2.38	320.57			−1.67	320.34
205	303	0.233		−0.007	0.037		0.253		0.036	−0.032	−2.80	328.03			−2.08	327.82
206	304	0.217		−0.020	0.039		0.235		0.048	−0.032	−2.65	334.51			−1.90	334.33
207	305	0.208		−0.027	0.040		0.224		0.055	−0.031	−2.91	342.26			−2.14	342.12
208	306	0.200		−0.027	0.038		0.215		0.053	−0.030	−2.74	348.90			−2.00	348.74
209	307	0.200		−0.033	0.043		0.215		0.061	−0.033	−3.27	356.53			−2.41	356.50
210	308	0.200		−0.027	0.042		0.215		0.053	−0.034	−3.19	363.22			−2.35	363.20
211	309	0.200		−0.027	0.042		0.215		0.053	−0.034	−3.47	371.24			−2.63	371.22
212	310	0.200		−0.020	0.040		0.216		0.045	−0.033	−3.23	378.23			−2.43	378.20
213	311	0.192		−0.020	0.038		0.207		0.043	−0.032	−3.30	386.60			−2.57	386.51
214	312	0.192		−0.013	0.036		0.207		0.034	−0.032	−3.06	393.73			−2.37	393.62
215	313	0.192		−0.007	0.034		0.208		0.027	−0.031	−3.29	402.07			−2.64	401.93
216	314	0.192		0.000	0.031		0.208		0.018	−0.030	−3.09	409.30			−2.50	409.12
217	315	0.192		0.000	0.034		0.208		0.019	−0.033	−3.57	417.51			−2.91	417.44
218	316	0.183		0.000	0.037		0.198		0.017	−0.036	−3.32	424.93			−2.59	424.94
219	317	0.183		0.000	0.042		0.198		0.018	−0.041	−3.79	433.28			−2.92	433.46
220	318	0.183		0.007	0.045		0.199		0.010	−0.045	−3.81	440.55			−2.79	440.91
221	319	0.183		0.013	0.041		0.199		0.002	−0.042	−4.05	449.26			−3.15	449.53
222	320	0.183		0.013	0.035		0.199		0.002	−0.036	−3.71	457.04			−2.94	457.19
223	321	0.183		0.020	0.031		0.199		−0.007	−0.034	−3.91	465.91			−3.22	466.02
224	322	0.183		0.027	0.024		0.200		−0.016	−0.029	−3.55	473.83			−2.95	473.87
225	323	0.183		0.027	0.017		0.199		−0.017	−0.022	−3.64	482.94			−3.16	482.89
226	324	0.025		0.000	0.000		0.027		0.000	0.000	−0.03	494.22			−0.03	493.73
227	325	0.025		0.000	−0.001		0.027		0.000	0.001	−0.88	502.69			−0.88	502.23
$Z = 99$ (Es)																
125	224	−0.025		0.000	0.000		−0.026		0.000	0.000	−1.22	75.58			−1.23	79.07
126	225	0.008	0.015	0.000	0.000	0.000	0.009	−0.020	0.000	0.000	−1.34	72.85			−1.34	76.21
127	226	−0.033	0.031	−0.007	0.000	0.001	−0.034	−0.041	0.009	0.000	−0.37	72.93			−0.37	76.16
128	227	0.008	0.061	0.000	0.000	0.000	0.010	−0.082	0.002	0.002	−0.26	70.75			−0.27	73.85
129	228	0.050		−0.020	−0.009		0.053		0.025	0.010	1.37	71.80			1.36	74.77
130	229	0.242		−0.020	0.009		0.263		0.051	0.000	0.55	69.02			0.49	71.81
131	230	0.242		−0.027	0.011		0.263		0.060	0.000	0.40	68.60			0.34	71.26
132	231	0.242		−0.027	0.014		0.262		0.060	−0.003	0.34	66.88			0.29	69.45
133	232	0.233		−0.033	0.015		0.252		0.066	−0.003	0.13	66.72			0.09	69.17
134	233	0.225		−0.033	0.016		0.243		0.064	−0.004	0.06	65.29			0.04	67.65
135	234	0.217		−0.040	0.017		0.234		0.071	−0.004	−0.22	65.34			−0.24	67.59
136	235	0.217		−0.040	0.021		0.234		0.071	−0.008	−0.39	64.13			−0.39	66.28
137	236	0.208		−0.047	0.021		0.224		0.078	−0.006	−0.72	64.42			−0.71	66.47
138	237	0.208		−0.047	0.024		0.224		0.078	−0.010	−0.94	63.44			−0.91	65.41
139	238	0.208		−0.047	0.026		0.224		0.079	−0.012	−1.32	63.96			−1.29	65.82
140	239	0.208		−0.047	0.029		0.224		0.079	−0.015	−1.60	63.22			−1.55	65.00
141	240	0.208		−0.047	0.031		0.224		0.079	−0.017	−1.94	64.05			−1.89	65.73
142	241	0.208		−0.047	0.034		0.224		0.079	−0.020	−2.22	63.58			−2.14	65.20
143	242	0.208		−0.047	0.037		0.224		0.079	−0.023	−2.58	64.67			−2.50	66.19
144	243	0.208		−0.040	0.038		0.224		0.071	−0.026	−2.64	64.69			−2.54	66.14

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 99$ (Es)																
145	244	0.217		−0.040	0.045		0.234		0.073	−0.032	−3.22	65.82			−3.10	67.20
146	245	0.217		−0.033	0.045		0.234		0.065	−0.034	−3.26	66.13			−3.11	67.45
147	246	0.217		−0.033	0.048		0.234		0.065	−0.037	−3.63	67.73			−3.47	68.97
148	247	0.217		−0.027	0.046		0.234		0.057	−0.037	−3.64	68.34	68.55	0.050	−3.47	69.50
149	248	0.217		−0.020	0.046		0.235		0.049	−0.039	−4.01	70.18	70.29	0.060	−3.85	71.26
150	249	0.217		−0.013	0.044		0.235		0.040	−0.038	−4.03	71.03	71.11	0.050	−3.86	72.04
151	250	0.225		−0.007	0.045		0.244		0.035	−0.041	−4.52	73.01			−4.34	73.95
152	251	0.225		0.000	0.046		0.245		0.027	−0.043	−4.38	74.28	74.51	0.006	−4.16	75.17
153	252	0.217		0.000	0.041		0.236		0.024	−0.039	−4.14	77.23	77.29	0.050	−3.96	78.01
154	253	0.217		0.007	0.038		0.236		0.016	−0.038	−3.73	79.00	79.01	0.003	−3.56	79.71
155	254	0.208		0.007	0.034		0.226		0.013	−0.034	−3.28	82.39	81.99	0.006	−3.14	83.00
156	255	0.208		0.013	0.029		0.226		0.006	−0.030	−2.90	84.39	84.08	0.011	−2.76	84.92
157	256	0.208		0.020	0.024		0.227		−0.003	−0.027	−2.92	87.54			−2.80	87.99
158	257	0.208		0.027	0.020		0.227		−0.012	−0.025	−2.62	89.68			−2.50	90.07
159	258	0.200		0.033	0.015		0.219		−0.021	−0.021	−2.62	93.09			−2.52	93.39
160	259	0.200		0.040	0.012		0.219		−0.030	−0.020	−2.51	95.28			−2.39	95.53
161	260	0.200		0.040	0.009		0.219		−0.030	−0.017	−2.75	98.66			−2.64	98.85
162	261	0.200		0.047	0.008		0.219		−0.039	−0.018	−2.65	101.06			−2.51	101.22
163	262	0.200		0.053	0.000		0.220		−0.047	−0.011	−2.65	104.91			−2.52	105.01
164	263	0.200		0.053	−0.005		0.219		−0.047	−0.006	−2.17	107.91			−2.03	107.96
165	264	0.192		0.053	−0.004		0.210		−0.049	−0.007	−1.93	112.21			−1.79	112.21
166	265	0.175		0.040	0.002		0.191		−0.035	−0.009	−1.46	115.42			−1.36	115.33
167	266	0.150		0.033	0.007		0.163		−0.030	−0.012	−0.95	120.20			−0.86	120.05
168	267	0.150		0.020	0.010		0.162		−0.014	−0.013	−0.85	123.25			−0.77	123.04
169	268	0.142		0.013	0.013		0.153		−0.006	−0.015	−0.99	127.59			−0.92	127.33
170	269	0.117		0.000	0.016		0.125		0.007	−0.016	−0.40	131.33			−0.33	131.03
171	270	0.108		0.007	0.011		0.116		−0.003	−0.012	−0.61	135.81			−0.56	135.44
172	271	0.100		0.013	0.004		0.107		−0.011	−0.005	−0.39	139.39			−0.35	138.97
173	272	0.100		0.020	−0.002		0.107		−0.020	0.000	−0.79	143.86			−0.75	143.40
174	273	0.100		0.027	−0.009		0.108		−0.029	0.006	−0.74	147.48			−0.67	147.01
175	274	0.100		0.040	−0.015		0.108		−0.044	0.010	−1.13	152.15			−1.01	151.71
176	275	0.092		0.040	−0.021		0.099		−0.045	0.017	−0.89	156.15			−0.74	155.70
177	276	−0.100		0.020	−0.003		−0.105		−0.019	0.005	−1.51	160.79			−1.47	160.20
178	277	−0.092		0.020	−0.010		−0.096		−0.019	0.012	−1.36	164.89			−1.30	164.29
179	278	−0.058		0.013	−0.006		−0.061		−0.014	0.007	−1.41	170.29			−1.39	169.62
180	279	−0.050		0.013	0.000		−0.053		−0.014	0.001	−1.24	174.61			−1.23	173.90
181	280	−0.033		0.013	0.004		−0.035		−0.015	−0.003	−1.49	179.98			−1.48	179.25
182	281	−0.008	0.035	0.000	0.000	0.000	−0.008	−0.047	0.001	0.001	−1.15	184.65			−1.12	183.91
183	282	0.000	0.037	0.000	0.000	−0.001	0.001	−0.050	0.001	0.001	−1.30	190.31			−1.26	189.55
184	283	0.000	0.051	0.000	0.000	−0.001	0.001	−0.068	0.001	0.002	−0.79	195.33			−0.73	194.58
185	284	0.000	0.073	0.000	0.000	−0.002	0.002	−0.098	0.002	0.003	−0.45	201.66			−0.31	200.96
186	285	0.000	0.082	0.000	0.000	−0.001	0.003	−0.110	0.003	0.004	0.10	206.90			0.28	206.23
187	286	0.233		−0.040	0.018		0.252		0.075	−0.003	0.55	213.50			0.95	213.03
188	287	0.233		−0.033	0.014		0.252		0.066	−0.001	0.40	218.22			0.77	217.70
189	288	0.233		−0.033	0.014		0.252		0.066	−0.001	0.09	224.24			0.46	223.70
190	289	0.233		−0.033	0.013		0.252		0.065	0.000	0.01	229.20			0.40	228.66
191	290	0.233		−0.033	0.012		0.252		0.065	0.001	−0.30	235.38			0.08	234.83
192	291	0.233		−0.027	0.011		0.252		0.058	0.000	−0.35	240.54			0.01	239.96
193	292	0.233		−0.027	0.010		0.252		0.058	0.001	−0.66	246.88			−0.30	246.29
194	293	0.233		−0.027	0.014		0.252		0.058	−0.003	−0.68	252.24			−0.29	251.67
195	294	0.233		−0.020	0.013		0.253		0.049	−0.005	−0.98	258.76			−0.62	258.14
196	295	0.233		−0.020	0.017		0.253		0.050	−0.009	−1.00	264.27			−0.61	263.69
197	296	0.242		−0.013	0.020		0.263		0.043	−0.013	−1.39	270.85			−0.99	270.28
198	297	0.242		−0.007	0.022		0.263		0.036	−0.017	−1.44	276.51			−1.00	275.96
199	298	0.250		0.000	0.024		0.273		0.030	−0.021	−1.90	283.17			−1.42	282.67
200	299	0.250		0.007	0.026		0.273		0.021	−0.025	−1.98	288.95			−1.46	288.49
201	300	0.250		0.007	0.029		0.273		0.022	−0.028	−2.45	295.76			−1.89	295.33

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 99 (Es)																
202	301	0.250		0.013	0.031		0.274		0.015	−0.032	−2.47	301.76			−1.83	301.41
203	302	0.250		0.013	0.033		0.274		0.015	−0.034	−2.86	308.79			−2.20	308.48
204	303	0.250		0.013	0.034		0.274		0.015	−0.035	−2.78	315.04			−2.06	314.79
205	304	0.242		0.007	0.037		0.264		0.021	−0.036	−3.06	322.34			−2.33	322.10
206	305	0.217		−0.013	0.040		0.235		0.040	−0.034	−2.91	328.80			−2.18	328.57
207	306	0.208		−0.020	0.042		0.225		0.047	−0.035	−3.12	336.31			−2.37	336.11
208	307	0.200		−0.027	0.042		0.215		0.053	−0.034	−3.01	342.88			−2.23	342.71
209	308	0.200		−0.027	0.044		0.215		0.054	−0.036	−3.46	350.30			−2.62	350.20
210	309	0.200		−0.020	0.043		0.216		0.045	−0.036	−3.35	357.02			−2.52	356.92
211	310	0.200		−0.020	0.043		0.216		0.045	−0.036	−3.66	364.70			−2.84	364.61
212	311	0.200		−0.013	0.041		0.216		0.036	−0.036	−3.43	371.68			−2.65	371.57
213	312	0.200		−0.007	0.040		0.216		0.029	−0.037	−3.64	379.62			−2.88	379.48
214	313	0.200		−0.007	0.040		0.216		0.029	−0.037	−3.55	386.59			−2.77	386.50
215	314	0.192		−0.007	0.036		0.208		0.027	−0.033	−3.64	394.77			−2.97	394.59
216	315	0.192		0.000	0.034		0.208		0.019	−0.033	−3.49	401.95			−2.86	401.75
217	316	0.192		0.000	0.036		0.208		0.019	−0.035	−3.96	409.89			−3.26	409.77
218	317	0.183		0.000	0.039		0.198		0.017	−0.038	−3.68	417.33			−2.93	417.29
219	318	0.183		0.000	0.044		0.198		0.018	−0.043	−4.14	425.41			−3.23	425.54
220	319	0.183		0.007	0.048		0.199		0.010	−0.048	−4.18	432.67			−3.11	432.97
221	320	0.183		0.013	0.043		0.199		0.002	−0.044	−4.44	441.07			−3.50	441.27
222	321	0.183		0.020	0.036		0.199		−0.007	−0.039	−4.13	448.81			−3.34	448.88
223	322	0.183		0.020	0.032		0.199		−0.007	−0.035	−4.29	457.44			−3.59	457.45
224	323	0.183		0.027	0.025		0.200		−0.016	−0.030	−3.94	465.34			−3.35	465.27
225	324	0.183		0.033	0.017		0.200		−0.024	−0.023	−4.06	474.14			−3.57	473.99
226	325	0.183		0.033	0.010		0.199		−0.025	−0.016	−3.69	482.19			−3.28	481.99
227	326	0.025		0.000	−0.001		0.027		0.000	0.001	−1.00	493.92			−1.00	493.33
228	327	0.000		0.000	0.001		0.000		0.000	−0.001	−1.78	500.95			−1.78	500.39
229	328	−0.017		0.000	0.001		−0.018		0.000	−0.001	−2.23	509.65			−2.23	509.12
Z = 100 (Fm)																
126	226	0.000		0.000	0.000		0.000		0.000	0.000	−1.62	80.20			−1.62	83.92
127	227	−0.025	0.019	0.000	0.000	0.002	−0.026	−0.025	0.000	0.000	−0.65	80.22			−0.66	83.80
128	228	−0.008	0.053	0.000	0.000	0.000	−0.007	−0.071	0.001	0.002	−0.30	77.89			−0.31	81.33
129	229	0.050		−0.020	−0.007		0.053		0.025	0.008	1.13	78.71			1.13	82.02
130	230	0.250		−0.013	0.009		0.272		0.044	−0.002	0.53	75.75			0.46	78.87
131	231	0.250		−0.013	0.009		0.272		0.044	−0.002	0.37	75.28			0.29	78.27
132	232	0.250		−0.013	0.013		0.272		0.044	−0.006	0.33	73.20			0.27	76.07
133	233	0.250		−0.020	0.015		0.272		0.053	−0.005	0.11	72.97			0.05	75.73
134	234	0.242		−0.020	0.018		0.263		0.052	−0.009	0.04	71.18			0.01	73.83
135	235	0.225		−0.033	0.018		0.243		0.064	−0.006	−0.12	71.31			−0.14	73.85
136	236	0.225		−0.033	0.022		0.243		0.064	−0.010	−0.28	69.72			−0.28	72.17
137	237	0.217		−0.040	0.022		0.234		0.071	−0.009	−0.56	70.01			−0.56	72.36
138	238	0.217		−0.040	0.026		0.234		0.072	−0.013	−0.80	68.64			−0.78	70.89
139	239	0.217		−0.040	0.028		0.234		0.072	−0.015	−1.17	69.14			−1.14	71.28
140	240	0.208		−0.040	0.028		0.224		0.070	−0.016	−1.36	68.10			−1.32	70.15
141	241	0.208		−0.047	0.032		0.224		0.079	−0.018	−1.72	68.88			−1.67	70.84
142	242	0.208		−0.040	0.033		0.224		0.070	−0.021	−1.99	68.05			−1.92	69.92
143	243	0.208		−0.040	0.036		0.224		0.071	−0.024	−2.36	69.08			−2.29	70.86
144	244	0.208		−0.040	0.039		0.224		0.071	−0.027	−2.47	68.69			−2.36	70.40
145	245	0.217		−0.033	0.044		0.234		0.064	−0.033	−3.07	69.77			−2.95	71.39
146	246	0.217		−0.027	0.045		0.234		0.057	−0.036	−3.13	69.69	70.12	0.040	−2.99	71.24
147	247	0.217		−0.027	0.047		0.234		0.057	−0.038	−3.52	71.23			−3.38	72.70
148	248	0.217		−0.020	0.045		0.235		0.049	−0.038	−3.57	71.43	71.89	0.012	−3.41	72.83
149	249	0.217		−0.013	0.045		0.235		0.040	−0.039	−3.97	73.22			−3.81	74.53
150	250	0.217		−0.007	0.044		0.235		0.033	−0.040	−4.04	73.66	74.07	0.012	−3.87	74.89
151	251	0.225		0.000	0.045		0.245		0.026	−0.042	−4.57	75.56	75.98	0.009	−4.39	76.72
152	252	0.225		0.007	0.046		0.245		0.018	−0.045	−4.47	76.43	76.81	0.005	−4.26	77.54
153	253	0.217		0.007	0.041		0.236		0.016	−0.041	−4.24	79.34	79.34	0.005	−4.06	80.33

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 100$ (Fm)																
154	254	0.217		0.013	0.038		0.237		0.008	−0.039	−3.88	80.71	80.90	0.004	−3.70	81.62
155	255	0.217		0.020	0.033		0.237		−0.001	−0.036	−3.71	83.79	83.79	0.005	−3.56	84.60
156	256	0.208		0.020	0.029		0.227		−0.003	−0.032	−3.09	85.66	85.48	0.007	−2.95	86.39
157	257	0.208		0.027	0.023		0.227		−0.012	−0.028	−3.13	88.77	88.58	0.007	−3.01	89.41
158	258	0.208		0.033	0.019		0.228		−0.019	−0.025	−2.88	90.51			−2.76	91.08
159	259	0.208		0.040	0.014		0.228		−0.028	−0.022	−3.08	93.69			−2.96	94.19
160	260	0.200		0.040	0.013		0.219		−0.030	−0.021	−2.88	95.61			−2.76	96.05
161	261	0.200		0.047	0.009		0.219		−0.039	−0.019	−3.12	98.98			−3.00	99.35
162	262	0.200		0.053	0.007		0.220		−0.046	−0.018	−3.05	101.00			−2.90	101.34
163	263	0.200		0.060	−0.001		0.220		−0.055	−0.012	−3.08	104.79			−2.92	105.08
164	264	0.200		0.060	−0.006		0.220		−0.056	−0.007	−2.60	107.45			−2.43	107.68
165	265	0.192		0.060	−0.005		0.211		−0.057	−0.007	−2.31	111.78			−2.15	111.95
166	266	0.175		0.047	0.000		0.191		−0.044	−0.009	−1.83	114.64			−1.71	114.73
167	267	0.150		0.033	0.007		0.163		−0.030	−0.012	−1.30	119.42			−1.22	119.41
168	268	0.150		0.027	0.009		0.163		−0.022	−0.013	−1.16	122.18			−1.07	122.12
169	269	0.142		0.020	0.012		0.154		−0.015	−0.015	−1.30	126.49			−1.22	126.38
170	270	0.117		0.007	0.016		0.126		−0.002	−0.017	−0.72	129.89			−0.65	129.72
171	271	0.108		0.007	0.012		0.116		−0.003	−0.013	−0.88	134.38			−0.84	134.14
172	272	0.100		0.013	0.005		0.107		−0.011	−0.006	−0.68	137.62			−0.64	137.32
173	273	0.100		0.027	−0.002		0.108		−0.028	−0.001	−1.11	142.04			−1.06	141.71
174	274	0.100		0.033	−0.009		0.108		−0.036	0.005	−1.05	145.33			−0.98	144.99
175	275	0.100		0.040	−0.015		0.108		−0.044	0.010	−1.43	150.00			−1.31	149.66
176	276	0.092		0.040	−0.020		0.099		−0.045	0.016	−1.17	153.69			−1.02	153.34
177	277	−0.100		0.020	−0.003		−0.105		−0.019	0.005	−1.68	158.42			−1.63	157.93
178	278	−0.092		0.020	−0.009		−0.096		−0.019	0.011	−1.53	162.19			−1.47	161.68
179	279	−0.058		0.013	−0.005		−0.061		−0.014	0.006	−1.63	167.52			−1.61	166.94
180	280	−0.050		0.013	0.000		−0.053		−0.014	0.001	−1.45	171.52			−1.44	170.90
181	281	−0.033		0.013	0.003		−0.035		−0.015	−0.002	−1.69	176.88			−1.68	176.23
182	282	−0.008	0.036	0.000	0.000	0.000	−0.008	−0.048	0.001	0.001	−1.29	181.29			−1.26	180.62
183	283	0.000	0.037	0.000	0.000	−0.001	0.001	−0.050	0.001	0.001	−1.43	186.94			−1.40	186.25
184	284	0.000	0.045	0.000	0.000	−0.001	0.001	−0.060	0.001	0.001	−0.93	191.63			−0.88	190.93
185	285	0.000	0.072	0.000	0.000	−0.002	0.002	−0.097	0.002	0.003	−0.52	198.01			−0.39	197.37
186	286	0.000		0.000	−0.001		0.000		0.000	0.001	0.61	203.51			0.61	202.71
187	287	0.000	0.093	0.000	0.000	−0.001	0.004	−0.125	0.004	0.006	0.28	209.32			0.51	208.74
188	288	0.233		−0.033	0.016		0.252		0.066	−0.004	0.54	214.13			0.92	213.67
189	289	0.233		−0.033	0.016		0.252		0.066	−0.004	0.23	220.14			0.61	219.65
190	290	0.233		−0.027	0.012		0.252		0.058	−0.001	0.13	224.76			0.48	224.23
191	291	0.233		−0.027	0.010		0.252		0.058	0.001	−0.19	230.91			0.15	230.37
192	292	0.233		−0.027	0.013		0.252		0.058	−0.002	−0.22	235.78			0.15	235.24
193	293	0.233		−0.020	0.008		0.253		0.049	0.000	−0.54	242.10			−0.22	241.51
194	294	0.233		−0.020	0.013		0.253		0.049	−0.005	−0.57	247.14			−0.22	246.56
195	295	0.233		−0.020	0.015		0.253		0.049	−0.007	−0.88	253.63			−0.52	253.05
196	296	0.233		−0.013	0.016		0.253		0.041	−0.010	−0.90	258.84			−0.54	258.25
197	297	0.242		−0.007	0.020		0.263		0.036	−0.015	−1.33	265.38			−0.93	264.82
198	298	0.242		0.000	0.022		0.264		0.028	−0.019	−1.36	270.74			−0.93	270.19
199	299	0.250		0.007	0.024		0.273		0.021	−0.023	−1.86	277.36			−1.38	276.86
200	300	0.250		0.007	0.028		0.273		0.022	−0.027	−2.03	282.74			−1.48	282.30
201	301	0.250		0.013	0.029		0.273		0.015	−0.030	−2.47	289.57			−1.90	289.16
202	302	0.250		0.020	0.031		0.274		0.007	−0.034	−2.46	295.29			−1.81	294.95
203	303	0.250		0.013	0.035		0.274		0.015	−0.036	−2.94	302.23			−2.25	301.93
204	304	0.250		0.013	0.036		0.274		0.016	−0.037	−2.85	308.19			−2.10	307.94
205	305	0.250		0.020	0.034		0.274		0.007	−0.037	−2.85	315.76			−2.11	315.50
206	306	0.225		0.000	0.040		0.245		0.026	−0.038	−2.90	321.72			−2.14	321.49
207	307	0.208		−0.013	0.041		0.225		0.038	−0.036	−2.94	329.40			−2.20	329.15
208	308	0.200		−0.020	0.041		0.216		0.045	−0.034	−2.79	335.71			−2.05	335.47
209	309	0.200		−0.020	0.043		0.216		0.045	−0.036	−3.23	343.13			−2.44	342.95
210	310	0.200		−0.013	0.042		0.216		0.037	−0.037	−3.10	349.57			−2.32	349.38

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 100 (Fm)																
211	311	0.200		−0.013	0.042		0.216		0.037	−0.037	−3.43	357.23			−2.66	357.05
212	312	0.200		−0.007	0.040		0.216		0.029	−0.037	−3.25	363.86			−2.50	363.67
213	313	0.200		0.007	0.036		0.217		0.012	−0.036	−3.27	371.98			−2.61	371.71
214	314	0.200		0.000	0.038		0.217		0.021	−0.036	−3.42	378.43			−2.69	378.23
215	315	0.192		0.000	0.034		0.208		0.019	−0.033	−3.55	386.57			−2.93	386.27
216	316	0.192		0.000	0.033		0.208		0.019	−0.032	−3.48	393.38			−2.87	393.08
217	317	0.183		0.000	0.034		0.198		0.017	−0.033	−3.65	401.60			−3.05	401.32
218	318	0.183		0.007	0.037		0.198		0.009	−0.037	−3.72	408.41			−3.01	408.25
219	319	0.183		0.007	0.042		0.199		0.009	−0.042	−4.22	416.44			−3.37	416.44
220	320	0.183		0.013	0.046		0.199		0.003	−0.047	−4.27	423.40			−3.25	423.59
221	321	0.183		0.020	0.041		0.200		−0.006	−0.044	−4.56	431.78			−3.64	431.88
222	322	0.183		0.020	0.035		0.199		−0.007	−0.038	−4.23	439.24			−3.47	439.21
223	323	0.183		0.027	0.031		0.200		−0.015	−0.035	−4.45	447.82			−3.75	447.74
224	324	0.183		0.033	0.023		0.200		−0.023	−0.029	−4.11	455.43			−3.51	455.28
225	325	0.183		0.033	0.017		0.200		−0.024	−0.023	−4.24	464.22			−3.75	463.97
226	326	0.183		0.040	0.008		0.200		−0.033	−0.015	−3.90	471.96			−3.44	471.70
227	327	0.025		0.000	−0.001		0.027		0.000	0.001	−1.29	483.60			−1.29	482.91
228	328	0.000		0.000	0.001		0.000		0.000	−0.001	−2.07	490.35			−2.07	489.68
229	329	−0.017		0.000	0.000		−0.018		0.000	0.000	−2.51	499.07			−2.51	498.43
230	330	−0.025		0.000	0.000		−0.026		0.000	0.000	−2.50	506.73			−2.49	506.12
231	331	0.050		−0.020	−0.005		0.053		0.025	0.006	−2.64	515.87			−2.55	515.37
Z = 101 (Md)																
128	229	−0.008	0.054	0.000	0.000	0.000	−0.007	−0.072	0.001	0.002	−0.43	87.43			−0.44	91.23
129	230	0.050		−0.013	−0.007		0.053		0.017	0.008	1.07	87.92			1.07	91.59
130	231	0.250		0.000	0.008		0.272		0.028	−0.005	0.46	84.91			0.36	88.34
131	232	0.250		−0.007	0.010		0.272		0.037	−0.005	0.25	84.01			0.15	87.31
132	233	0.250		−0.007	0.014		0.272		0.037	−0.009	0.20	81.87			0.12	85.06
133	234	0.250		−0.007	0.015		0.272		0.037	−0.010	−0.02	81.26			−0.10	84.32
134	235	0.250		−0.007	0.020		0.272		0.038	−0.015	−0.13	79.38			−0.20	82.33
135	236	0.233		−0.020	0.016		0.253		0.050	−0.008	−0.26	79.16			−0.31	82.00
136	237	0.225		−0.027	0.020		0.243		0.057	−0.010	−0.35	77.60			−0.38	80.34
137	238	0.217		−0.033	0.019		0.234		0.062	−0.008	−0.60	77.55			−0.63	80.17
138	239	0.208		−0.033	0.022		0.224		0.061	−0.011	−0.72	76.26			−0.73	78.79
139	240	0.208		−0.040	0.024		0.224		0.070	−0.012	−1.09	76.38			−1.09	78.79
140	241	0.208		−0.040	0.027		0.224		0.070	−0.015	−1.37	75.22			−1.35	77.54
141	242	0.208		−0.040	0.029		0.224		0.070	−0.017	−1.73	75.62			−1.71	77.84
142	243	0.208		−0.040	0.032		0.224		0.070	−0.020	−1.99	74.77			−1.95	76.90
143	244	0.208		−0.040	0.035		0.224		0.070	−0.023	−2.36	75.43			−2.31	77.46
144	245	0.208		−0.033	0.036		0.224		0.062	−0.026	−2.47	75.00			−2.41	76.94
145	246	0.208		−0.027	0.038		0.224		0.055	−0.029	−2.81	75.96			−2.75	77.81
146	247	0.217		−0.020	0.041		0.235		0.048	−0.034	−3.16	75.56			−3.08	77.33
147	248	0.217		−0.020	0.043		0.235		0.049	−0.036	−3.59	76.71			−3.49	78.39
148	249	0.217		−0.013	0.042		0.235		0.040	−0.036	−3.68	76.83			−3.57	78.43
149	250	0.217		−0.007	0.042		0.235		0.033	−0.038	−4.10	78.24			−3.99	79.74
150	251	0.217		0.000	0.040		0.236		0.024	−0.038	−4.23	78.58			−4.11	80.01
151	252	0.225		0.007	0.042		0.245		0.018	−0.041	−4.76	80.12			−4.63	81.48
152	253	0.225		0.013	0.043		0.246		0.011	−0.044	−4.71	80.91			−4.55	82.20
153	254	0.217		0.013	0.038		0.237		0.008	−0.039	−4.53	83.40			−4.40	84.58
154	255	0.217		0.020	0.034		0.237		0.000	−0.037	−4.20	84.72	84.83	0.007	−4.06	85.82
155	256	0.217		0.020	0.031		0.237		−0.001	−0.034	−4.13	87.36	87.55	0.050	−4.01	88.36
156	257	0.208		0.027	0.026		0.227		−0.011	−0.031	−3.51	89.20	88.98	0.005	−3.39	90.12
157	258	0.208		0.027	0.023		0.227		−0.012	−0.028	−3.64	91.87	91.68	0.008	−3.54	92.69
158	259	0.208		0.033	0.019		0.228		−0.019	−0.025	−3.43	93.54			−3.32	94.30
159	260	0.208		0.040	0.014		0.228		−0.028	−0.022	−3.65	96.34			−3.56	97.02
160	261	0.200		0.040	0.013		0.219		−0.030	−0.021	−3.46	98.23			−3.36	98.84
161	262	0.200		0.047	0.010		0.219		−0.038	−0.020	−3.72	101.23			−3.61	101.78
162	263	0.200		0.053	0.008		0.220		−0.046	−0.019	−3.66	103.21			−3.53	103.71

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 101 (Md)																
163	264	0.200		0.060	0.002		0.220		−0.055	−0.015	−3.70	106.65			−3.56	107.10
164	265	0.200		0.060	−0.003		0.220		−0.055	−0.010	−3.20	109.30			−3.05	109.69
165	266	0.192		0.060	−0.002		0.211		−0.057	−0.010	−2.89	113.30			−2.75	113.63
166	267	0.183		0.047	0.002		0.200		−0.042	−0.011	−2.42	116.15			−2.30	116.39
167	268	0.158		0.040	0.007		0.172		−0.037	−0.014	−2.12	120.35			−2.03	120.51
168	269	0.150		0.027	0.010		0.163		−0.022	−0.014	−1.55	123.51			−1.47	123.60
169	270	0.142		0.020	0.012		0.154		−0.015	−0.015	−1.66	127.51			−1.59	127.54
170	271	0.125		0.013	0.014		0.135		−0.008	−0.016	−1.40	130.57			−1.34	130.54
171	272	0.108		0.007	0.011		0.116		−0.003	−0.012	−1.17	135.12			−1.13	135.02
172	273	0.108		0.020	0.004		0.116		−0.019	−0.006	−1.15	138.15			−1.11	137.99
173	274	0.100		0.027	−0.002		0.108		−0.028	−0.001	−1.38	142.44			−1.33	142.24
174	275	0.100		0.033	−0.009		0.108		−0.036	0.005	−1.32	145.71			−1.25	145.49
175	276	0.100		0.040	−0.015		0.108		−0.044	0.010	−1.68	150.07			−1.57	149.84
176	277	0.100		0.040	−0.021		0.108		−0.045	0.016	−1.42	153.74			−1.27	153.51
177	278	−0.100		0.020	−0.002		−0.105		−0.019	0.004	−1.81	158.26			−1.77	157.88
178	279	−0.100		0.027	−0.007		−0.105		−0.027	0.010	−1.67	162.01			−1.60	161.62
179	280	−0.058		0.013	−0.005		−0.061		−0.014	0.006	−1.72	167.06			−1.70	166.58
180	281	−0.050		0.013	0.000		−0.053		−0.014	0.001	−1.53	171.05			−1.52	170.53
181	282	−0.033		0.013	0.004		−0.035		−0.015	−0.003	−1.74	176.13			−1.73	175.57
182	283	−0.008	0.050	0.000	0.000	0.000	−0.007	−0.067	0.001	0.002	−1.33	180.53			−1.27	179.98
183	284	0.000	0.052	0.000	0.000	−0.001	0.001	−0.070	0.001	0.002	−1.46	185.86			−1.40	185.28
184	285	0.000	0.056	0.000	0.000	−0.001	0.001	−0.075	0.001	0.002	−0.99	190.50			−0.92	189.91
185	286	0.000		0.000	−0.002		0.000		0.000	0.002	0.06	197.20			0.05	196.50
186	287	0.000	0.083	0.000	0.000	−0.001	0.003	−0.112	0.003	0.004	−0.12	201.38			0.06	200.84
187	288	0.000	0.093	0.000	0.000	−0.001	0.004	−0.125	0.004	0.006	0.10	207.42			0.32	206.89
188	289	0.233		−0.027	0.010		0.252		0.058	0.001	0.36	212.22			0.67	211.76
189	290	0.233		−0.027	0.011		0.252		0.058	0.000	0.06	217.92			0.38	217.43
190	291	0.233		−0.020	0.006		0.253		0.049	0.003	−0.06	222.51			0.23	221.98
191	292	0.233		−0.020	0.005		0.253		0.049	0.004	−0.38	228.35			−0.09	227.80
192	293	0.233		−0.020	0.007		0.253		0.049	0.001	−0.42	233.19			−0.12	232.63
193	294	0.233		−0.013	0.003		0.253		0.040	0.003	−0.73	239.21			−0.46	238.61
194	295	0.233		−0.013	0.007		0.253		0.040	−0.001	−0.76	244.23			−0.47	243.63
195	296	0.233		−0.013	0.009		0.253		0.040	−0.003	−1.08	250.41			−0.78	249.80
196	297	0.233		−0.007	0.012		0.253		0.033	−0.008	−1.10	255.61			−0.80	254.98
197	298	0.242		0.000	0.014		0.263		0.027	−0.011	−1.52	261.85			−1.20	261.23
198	299	0.242		0.000	0.018		0.263		0.027	−0.015	−1.62	267.12			−1.25	266.54
199	300	0.250		0.007	0.020		0.273		0.021	−0.019	−2.11	273.45			−1.70	272.90
200	301	0.250		0.013	0.022		0.273		0.014	−0.023	−2.27	278.83			−1.81	278.32
201	302	0.250		0.013	0.025		0.273		0.014	−0.026	−2.74	285.33			−2.25	284.84
202	303	0.250		0.020	0.027		0.274		0.006	−0.030	−2.77	291.00			−2.22	290.57
203	304	0.250		0.020	0.029		0.274		0.006	−0.032	−3.14	297.75			−2.55	297.35
204	305	0.250		0.020	0.030		0.274		0.006	−0.033	−3.03	303.72			−2.39	303.36
205	306	0.250		0.027	0.028		0.275		−0.002	−0.033	−3.04	310.98			−2.41	310.61
206	307	0.242		0.020	0.030		0.265		0.005	−0.033	−2.99	317.03			−2.37	316.65
207	308	0.217		0.000	0.036		0.236		0.024	−0.034	−3.21	324.22			−2.60	323.84
208	309	0.208		−0.007	0.037		0.225		0.030	−0.033	−3.03	330.56			−2.41	330.19
209	310	0.200		−0.013	0.039		0.216		0.036	−0.034	−3.26	337.89			−2.61	337.55
210	311	0.200		−0.007	0.037		0.216		0.029	−0.034	−3.15	344.31			−2.51	343.95
211	312	0.200		−0.007	0.038		0.216		0.029	−0.035	−3.50	351.66			−2.85	351.32
212	313	0.200		0.007	0.033		0.217		0.012	−0.033	−3.18	358.43			−2.59	358.04
213	314	0.200		0.007	0.034		0.217		0.012	−0.034	−3.57	365.89			−2.97	365.51
214	315	0.200		0.007	0.034		0.217		0.012	−0.034	−3.58	372.47			−2.96	372.11
215	316	0.192		0.000	0.034		0.208		0.019	−0.033	−3.83	380.20			−3.25	379.82
216	317	0.192		0.000	0.032		0.208		0.018	−0.031	−3.76	387.00			−3.19	386.62
217	318	0.192		0.007	0.034		0.208		0.010	−0.034	−4.27	394.60			−3.65	394.28
218	319	0.183		0.007	0.037		0.198		0.009	−0.037	−4.03	401.71			−3.34	401.47
219	320	0.183		0.013	0.041		0.199		0.002	−0.042	−4.57	409.42			−3.75	409.32

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 101 (Md)																
220	321	0.183		0.013	0.045		0.199		0.003	−0.046	−4.57	416.43			−3.60	416.49
221	322	0.183		0.020	0.041		0.200		−0.006	−0.044	−4.91	424.47			−4.03	424.46
222	323	0.183		0.027	0.036		0.200		−0.015	−0.040	−4.66	431.85			−3.87	431.77
223	324	0.183		0.027	0.032		0.200		−0.015	−0.036	−4.85	440.17			−4.15	440.01
224	325	0.183		0.033	0.026		0.200		−0.023	−0.032	−4.54	447.75			−3.91	447.54
225	326	0.183		0.033	0.018		0.200		−0.024	−0.024	−4.64	456.29			−4.15	455.95
226	327	0.183		0.040	0.009		0.200		−0.033	−0.016	−4.29	464.03			−3.85	463.67
227	328	0.025		0.000	−0.001		0.027		0.000	0.001	−1.54	475.54			−1.54	474.76
228	329	0.000		0.000	0.001		0.000		0.000	−0.001	−2.31	482.30			−2.31	481.53
229	330	−0.008		0.000	0.000		−0.008		0.000	0.000	−2.75	490.73			−2.76	489.99
230	331	−0.025		0.000	0.000		−0.026		0.000	0.000	−2.71	498.43			−2.71	497.71
231	332	0.050		−0.020	−0.005		0.053		0.025	0.006	−2.86	507.28			−2.78	506.67
232	333	0.067		−0.027	−0.002		0.071		0.034	0.005	−2.82	515.09			−2.68	514.56
233	334	0.083		−0.033	0.005		0.088		0.043	−0.001	−3.15	523.88			−2.94	523.45
Z = 102 (No)																
130	232	−0.025	0.073	0.000	0.000	−0.001	−0.024	−0.098	0.002	0.003	1.00	93.03			0.99	96.92
131	233	0.258		0.000	0.006		0.281		0.030	−0.003	0.35	91.63			0.24	95.29
132	234	0.258		0.000	0.009		0.281		0.030	−0.006	0.30	89.12			0.21	92.65
133	235	0.258		0.000	0.011		0.281		0.030	−0.008	0.08	88.47			−0.01	91.87
134	236	0.258		0.000	0.014		0.281		0.030	−0.011	−0.01	86.22			−0.09	89.50
135	237	0.258		−0.007	0.018		0.281		0.039	−0.012	−0.22	85.89			−0.29	89.04
136	238	0.242		−0.013	0.020		0.263		0.043	−0.013	−0.27	83.98			−0.32	87.04
137	239	0.225		−0.027	0.019		0.243		0.057	−0.009	−0.39	84.03			−0.43	86.97
138	240	0.217		−0.027	0.022		0.234		0.055	−0.013	−0.57	82.29			−0.59	85.13
139	241	0.217		−0.033	0.025		0.234		0.063	−0.014	−0.88	82.43			−0.89	85.16
140	242	0.208		−0.033	0.025		0.224		0.061	−0.015	−1.08	80.98			−1.07	83.60
141	243	0.208		−0.040	0.029		0.224		0.070	−0.017	−1.42	81.37			−1.40	83.89
142	244	0.208		−0.033	0.030		0.224		0.061	−0.020	−1.69	80.13			−1.66	82.55
143	245	0.208		−0.033	0.033		0.224		0.062	−0.023	−2.06	80.76			−2.03	83.07
144	246	0.208		−0.027	0.034		0.224		0.054	−0.025	−2.18	79.95			−2.13	82.17
145	247	0.208		−0.027	0.037		0.224		0.055	−0.028	−2.55	80.86			−2.49	82.98
146	248	0.217		−0.020	0.040		0.235		0.048	−0.033	−2.90	80.08			−2.82	82.12
147	249	0.217		−0.013	0.040		0.235		0.040	−0.034	−3.31	81.21			−3.23	83.15
148	250	0.217		−0.007	0.039		0.235		0.032	−0.035	−3.44	80.93			−3.35	82.78
149	251	0.217		0.000	0.040		0.236		0.024	−0.038	−3.87	82.30			−3.77	84.06
150	252	0.217		0.000	0.040		0.236		0.024	−0.038	−4.08	82.20	82.86	0.013	−3.96	83.88
151	253	0.217		0.007	0.041		0.236		0.016	−0.041	−4.49	83.84			−4.36	85.43
152	254	0.225		0.013	0.042		0.246		0.011	−0.043	−4.65	84.05	84.72	0.018	−4.49	85.58
153	255	0.217		0.020	0.037		0.237		0.000	−0.040	−4.44	86.55	86.85	0.013	−4.31	87.97
154	256	0.217		0.020	0.033		0.237		−0.001	−0.036	−4.19	87.42	87.82	0.013	−4.06	88.75
155	257	0.217		0.027	0.028		0.238		−0.009	−0.033	−4.11	90.03	90.22	0.030	−4.01	91.26
156	258	0.208		0.033	0.023		0.228		−0.019	−0.029	−3.57	91.44			−3.47	92.58
157	259	0.208		0.033	0.020		0.228		−0.019	−0.026	−3.74	94.05	94.02	0.011	−3.65	95.09
158	260	0.208		0.040	0.015		0.228		−0.028	−0.023	−3.57	95.32			−3.47	96.30
159	261	0.200		0.040	0.012		0.219		−0.030	−0.020	−3.73	98.17			−3.64	99.05
160	262	0.200		0.047	0.009		0.219		−0.039	−0.019	−3.73	99.52			−3.62	100.34
161	263	0.200		0.053	0.006		0.220		−0.046	−0.017	−4.03	102.45			−3.92	103.21
162	264	0.200		0.060	0.005		0.220		−0.054	−0.018	−4.01	104.04			−3.87	104.75
163	265	0.200		0.067	−0.002		0.221		−0.064	−0.012	−4.06	107.45			−3.91	108.10
164	266	0.200		0.067	−0.007		0.220		−0.064	−0.007	−3.58	109.74			−3.41	110.33
165	267	0.192		0.067	−0.007		0.211		−0.065	−0.007	−3.24	113.74			−3.09	114.26
166	268	0.183		0.060	−0.005		0.201		−0.058	−0.007	−2.80	116.21			−2.65	116.67
167	269	0.158		0.040	0.005		0.172		−0.037	−0.012	−2.55	120.35			−2.46	120.68
168	270	0.150		0.033	0.009		0.163		−0.030	−0.014	−1.94	123.20			−1.86	123.47
169	271	0.142		0.027	0.012		0.154		−0.023	−0.016	−2.06	127.18			−1.98	127.38
170	272	0.125		0.020	0.013		0.135		−0.017	−0.015	−1.77	129.92			−1.70	130.06
171	273	0.108		0.013	0.012		0.116		−0.010	−0.013	−1.59	134.41			−1.54	134.47

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 102 (No)																
172	274	0.108		0.020	0.004		0.116		−0.019	−0.006	−1.53	137.14			−1.49	137.14
173	275	0.100		0.027	−0.001		0.108		−0.028	−0.002	−1.78	141.39			−1.73	141.34
174	276	0.100		0.033	−0.008		0.108		−0.036	0.004	−1.72	144.33			−1.65	144.25
175	277	0.100		0.040	−0.015		0.108		−0.044	0.010	−2.08	148.66			−1.98	148.57
176	278	0.100		0.047	−0.021		0.108		−0.053	0.016	−1.81	152.01			−1.65	151.93
177	279	−0.100		0.027	−0.001		−0.105		−0.027	0.004	−2.05	156.66			−2.00	156.43
178	280	−0.092		0.027	−0.008		−0.096		−0.028	0.011	−1.91	160.09			−1.84	159.82
179	281	−0.058		0.013	−0.004		−0.061		−0.014	0.005	−2.06	165.02			−2.04	164.66
180	282	−0.050		0.013	0.000		−0.053		−0.014	0.001	−1.86	168.69			−1.85	168.28
181	283	−0.017	0.030	0.007	0.000	0.001	−0.018	−0.040	−0.008	0.001	−2.01	173.81			−1.99	173.37
182	284	0.000	0.037	0.000	0.000	−0.001	0.001	−0.050	0.001	0.001	−1.65	177.83			−1.62	177.36
183	285	0.000	0.047	0.000	0.000	−0.001	0.001	−0.063	0.001	0.001	−1.72	183.22			−1.67	182.73
184	286	0.000		0.000	−0.001		0.000		0.000	0.001	−1.17	187.62			−1.17	187.05
185	287	0.000	0.073	0.000	0.000	−0.002	0.002	−0.098	0.002	0.003	−0.87	193.55			−0.75	193.07
186	288	0.000	0.081	0.000	0.000	−0.001	0.003	−0.109	0.003	0.004	−0.29	198.16			−0.13	197.69
187	289	0.000	0.092	0.000	0.000	−0.001	0.004	−0.124	0.004	0.005	−0.05	204.22			0.16	203.76
188	290	0.000		0.000	−0.001		0.000		0.000	0.001	2.18	210.66			2.17	209.96
189	291	0.233		−0.020	0.004		0.253		0.049	0.005	0.23	214.69			0.51	214.25
190	292	0.233		−0.020	0.003		0.253		0.048	0.006	0.12	218.98			0.42	218.53
191	293	0.233		−0.020	0.001		0.253		0.048	0.008	−0.20	224.81			0.09	224.33
192	294	0.233		−0.013	0.000		0.253		0.040	0.006	−0.26	229.32			0.02	228.80
193	295	0.233		−0.013	0.000		0.253		0.040	0.006	−0.58	235.32			−0.29	234.78
194	296	0.233		−0.007	0.002		0.253		0.032	0.003	−0.59	240.05			−0.32	239.48
195	297	0.233		−0.007	0.004		0.253		0.032	0.001	−0.91	246.22			−0.63	245.63
196	298	0.233		−0.007	0.008		0.253		0.033	−0.004	−0.95	251.08			−0.66	250.50
197	299	0.242		0.000	0.011		0.263		0.026	−0.008	−1.38	257.29			−1.07	256.71
198	300	0.242		0.007	0.013		0.264		0.018	−0.012	−1.49	262.26			−1.15	261.69
199	301	0.250		0.013	0.016		0.273		0.013	−0.017	−2.00	268.56			−1.62	268.01
200	302	0.250		0.020	0.018		0.274		0.005	−0.021	−2.15	273.64			−1.72	273.13
201	303	0.250		0.020	0.021		0.274		0.005	−0.024	−2.64	280.11			−2.18	279.62
202	304	0.250		0.027	0.024		0.275		−0.003	−0.029	−2.64	285.50			−2.11	285.07
203	305	0.250		0.027	0.025		0.275		−0.003	−0.030	−2.97	292.28			−2.42	291.86
204	306	0.250		0.027	0.026		0.275		−0.003	−0.031	−2.86	297.95			−2.27	297.56
205	307	0.250		0.033	0.024		0.275		−0.010	−0.031	−2.89	305.18			−2.30	304.78
206	308	0.250		0.040	0.022		0.276		−0.019	−0.031	−2.56	311.22			−1.95	310.84
207	309	0.250		0.040	0.022		0.276		−0.019	−0.031	−2.76	318.43			−2.13	318.06
208	310	0.242		0.040	0.022		0.267		−0.020	−0.031	−2.56	324.49			−1.95	324.10
209	311	0.242		0.040	0.021		0.267		−0.020	−0.030	−2.77	331.83			−2.17	331.43
210	312	0.233		0.040	0.021		0.256		−0.022	−0.030	−2.64	337.97			−2.05	337.56
211	313	0.233		0.040	0.021		0.256		−0.022	−0.030	−2.95	345.36			−2.35	344.96
212	314	0.200		0.013	0.026		0.217		0.004	−0.028	−2.91	351.55			−2.43	351.02
213	315	0.200		0.013	0.026		0.217		0.004	−0.028	−3.31	358.99			−2.83	358.47
214	316	0.200		0.013	0.026		0.217		0.004	−0.028	−3.36	365.25			−2.86	364.74
215	317	0.192		0.007	0.027		0.208		0.010	−0.027	−3.65	372.93			−3.17	372.41
216	318	0.192		0.007	0.026		0.208		0.009	−0.026	−3.64	379.38			−3.17	378.86
217	319	0.192		0.007	0.030		0.208		0.010	−0.030	−4.14	386.99			−3.61	386.54
218	320	0.192		0.013	0.032		0.209		0.003	−0.033	−4.24	393.47			−3.63	393.11
219	321	0.183		0.013	0.037		0.199		0.002	−0.038	−4.52	401.44			−3.81	401.17
220	322	0.192		0.027	0.038		0.210		−0.013	−0.042	−4.82	407.85			−3.98	407.74
221	323	0.183		0.027	0.037		0.200		−0.015	−0.041	−4.95	416.10			−4.16	415.94
222	324	0.192		0.033	0.030		0.210		−0.021	−0.036	−4.86	423.04			−4.15	422.82
223	325	0.192		0.033	0.026		0.210		−0.022	−0.032	−5.03	431.38			−4.39	431.09
224	326	0.192		0.040	0.020		0.210		−0.030	−0.028	−4.70	438.70			−4.10	438.38
225	327	0.183		0.040	0.016		0.200		−0.032	−0.023	−4.88	447.15			−4.37	446.76
226	328	0.183		0.040	0.010		0.200		−0.033	−0.017	−4.55	454.59			−4.10	454.16
227	329	0.017		0.000	0.000		0.018		0.000	0.000	−1.96	465.94			−1.96	465.08
228	330	0.000		0.000	0.001		0.000		0.000	−0.001	−2.69	472.46			−2.69	471.61

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 102 (No)																
229	331	−0.008		0.000	0.000		−0.008		0.000	0.000	−3.09	480.94			−3.09	480.11
230	332	−0.017		0.000	0.000		−0.018		0.000	0.000	−3.09	488.31			−3.09	487.50
231	333	0.050		−0.020	−0.004		0.053		0.025	0.005	−3.20	497.20			−3.12	496.49
232	334	0.067		−0.027	−0.001		0.071		0.034	0.004	−3.10	504.80			−2.97	504.17
233	335	0.075		−0.033	0.005		0.080		0.042	−0.002	−3.46	513.56			−3.26	513.01
234	336	0.083		−0.033	0.011		0.088		0.043	−0.007	−3.33	521.31			−3.10	520.82
235	337	0.092		−0.020	0.015		0.098		0.028	−0.013	−3.77	530.11			−3.57	529.61
236	338	0.092		−0.013	0.015		0.098		0.020	−0.013	−3.62	537.99			−3.44	537.50
Z = 103 (Lr)																
132	235	0.258		0.007	0.008		0.282		0.021	−0.007	0.14	98.57			0.03	102.44
133	236	0.258		0.007	0.009		0.282		0.021	−0.008	−0.07	97.54			−0.19	101.27
134	237	0.258		0.007	0.013		0.282		0.022	−0.012	−0.17	95.24			−0.27	98.86
135	238	0.258		0.000	0.016		0.281		0.031	−0.013	−0.37	94.54			−0.47	98.02
136	239	0.250		0.000	0.019		0.272		0.029	−0.016	−0.47	92.55			−0.54	95.92
137	240	0.242		−0.007	0.020		0.263		0.036	−0.015	−0.67	92.13			−0.75	95.37
138	241	0.225		−0.013	0.021		0.244		0.040	−0.015	−0.73	90.48			−0.77	93.63
139	242	0.217		−0.020	0.022		0.235		0.047	−0.015	−0.95	90.33			−0.99	93.36
140	243	0.208		−0.027	0.024		0.224		0.054	−0.015	−1.13	88.87			−1.14	91.79
141	244	0.208		−0.027	0.026		0.224		0.054	−0.017	−1.49	88.86			−1.50	91.67
142	245	0.208		−0.027	0.029		0.224		0.054	−0.020	−1.72	87.62			−1.72	90.33
143	246	0.208		−0.027	0.031		0.224		0.054	−0.022	−2.09	87.89			−2.09	90.48
144	247	0.208		−0.020	0.032		0.225		0.046	−0.025	−2.25	87.01			−2.23	89.50
145	248	0.208		−0.020	0.035		0.225		0.046	−0.028	−2.61	87.55			−2.59	89.93
146	249	0.217		−0.007	0.035		0.235		0.032	−0.031	−2.97	86.74			−2.93	89.03
147	250	0.217		−0.007	0.038		0.235		0.032	−0.034	−3.42	87.46			−3.38	89.65
148	251	0.217		0.000	0.036		0.236		0.024	−0.034	−3.61	87.09			−3.55	89.19
149	252	0.217		0.007	0.038		0.236		0.016	−0.038	−4.04	88.09			−3.98	90.09
150	253	0.217		0.007	0.038		0.236		0.016	−0.038	−4.32	87.89			−4.24	89.81
151	254	0.217		0.013	0.039		0.237		0.008	−0.040	−4.76	89.15			−4.67	90.97
152	255	0.225		0.020	0.040		0.246		0.002	−0.043	−4.94	89.30			−4.82	91.07
153	256	0.217		0.027	0.035		0.238		−0.009	−0.040	−4.76	91.42			−4.66	93.07
154	257	0.217		0.027	0.031		0.238		−0.009	−0.036	−4.57	92.20			−4.47	93.75
155	258	0.217		0.033	0.026		0.238		−0.017	−0.032	−4.53	94.42			−4.45	95.87
156	259	0.208		0.033	0.022		0.228		−0.019	−0.028	−4.08	95.71	95.84	0.050	−4.00	97.07
157	260	0.208		0.040	0.018		0.228		−0.028	−0.026	−4.24	97.96	98.13	0.070	−4.17	99.23
158	261	0.208		0.040	0.015		0.228		−0.028	−0.023	−4.13	99.16			−4.05	100.34
159	262	0.200		0.047	0.010		0.219		−0.038	−0.020	−4.31	101.64			−4.23	102.74
160	263	0.200		0.053	0.008		0.220		−0.046	−0.019	−4.36	102.91			−4.26	103.95
161	264	0.200		0.060	0.005		0.220		−0.054	−0.018	−4.64	105.51			−4.53	106.48
162	265	0.200		0.067	0.004		0.221		−0.063	−0.018	−4.66	107.04			−4.52	107.97
163	266	0.200		0.067	−0.002		0.221		−0.064	−0.012	−4.76	110.05			−4.63	110.89
164	267	0.200		0.067	−0.007		0.220		−0.064	−0.007	−4.27	112.32			−4.14	113.09
165	268	0.192		0.067	−0.007		0.211		−0.065	−0.007	−3.93	115.99			−3.79	116.69
166	269	0.183		0.060	−0.004		0.201		−0.058	−0.008	−3.42	118.50			−3.29	119.13
167	270	0.158		0.047	0.005		0.173		−0.045	−0.013	−3.08	122.39			−2.98	122.92
168	271	0.150		0.040	0.008		0.163		−0.038	−0.014	−2.45	125.24			−2.36	125.70
169	272	0.150		0.033	0.006		0.163		−0.030	−0.011	−2.58	128.86			−2.51	129.24
170	273	0.142		0.033	0.006		0.154		−0.031	−0.011	−2.35	131.54			−2.28	131.85
171	274	0.117		0.020	0.011		0.126		−0.018	−0.013	−2.23	135.62			−2.18	135.85
172	275	0.117		0.027	0.004		0.126		−0.026	−0.007	−2.12	138.38			−2.07	138.55
173	276	0.100		0.027	−0.001		0.108		−0.028	−0.002	−2.17	142.50			−2.12	142.61
174	277	0.100		0.033	−0.007		0.108		−0.036	0.003	−2.10	145.43			−2.04	145.50
175	278	0.100		0.040	−0.014		0.108		−0.044	0.009	−2.45	149.45			−2.36	149.49
176	279	0.100		0.047	−0.020		0.108		−0.053	0.015	−2.17	152.79			−2.02	152.84
177	280	−0.100		0.027	−0.001		−0.105		−0.027	0.004	−2.30	157.22			−2.26	157.12
178	281	−0.092		0.027	−0.007		−0.096		−0.028	0.010	−2.16	160.62			−2.10	160.48
179	282	−0.058		0.013	−0.005		−0.061		−0.014	0.006	−2.28	165.25			−2.27	165.02

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 103 (Lr)																
180	283	−0.050		0.013	0.001		−0.053		−0.014	0.000	−2.08	168.92			−2.07	168.64
181	284	−0.025	0.031	0.007	0.000	0.001	−0.026	−0.041	−0.008	0.001	−2.21	173.73			−2.19	173.41
182	285	0.000	0.050	0.000	0.000	−0.001	0.001	−0.067	0.001	0.002	−1.83	177.76			−1.77	177.43
183	286	0.000		0.000	−0.001		0.000		0.000	0.001	−1.87	182.84			−1.88	182.42
184	287	0.000	0.060	0.000	0.000	−0.001	0.002	−0.081	0.002	0.002	−1.42	187.13			−1.35	186.75
185	288	0.000	0.076	0.000	0.000	−0.002	0.003	−0.102	0.002	0.004	−1.13	192.73			−1.00	192.36
186	289	0.000	0.084	0.000	0.000	−0.001	0.003	−0.113	0.003	0.005	−0.58	197.31			−0.41	196.94
187	290	0.000		0.000	−0.002		0.000		0.000	0.002	1.29	204.67			1.29	204.10
188	291	0.000		0.000	−0.001		0.000		0.000	0.001	2.05	209.63			2.05	209.02
189	292	0.233		−0.013	0.001		0.253		0.040	0.005	0.11	213.35			0.34	212.96
190	293	0.225		−0.013	−0.004		0.244		0.038	0.010	−0.03	217.60			0.22	217.18
191	294	0.225		−0.013	−0.005		0.244		0.037	0.011	−0.36	223.11			−0.11	222.66
192	295	0.225		−0.007	−0.007		0.244		0.030	0.011	−0.40	227.62			−0.16	227.14
193	296	0.225		−0.007	−0.006		0.244		0.030	0.010	−0.70	233.33			−0.46	232.82
194	297	0.225		−0.007	−0.001		0.244		0.030	0.005	−0.71	238.05			−0.47	237.51
195	298	0.233		0.000	0.001		0.253		0.024	0.001	−1.08	243.85			−0.84	243.29
196	299	0.233		0.000	0.005		0.253		0.024	−0.003	−1.14	248.69			−0.88	248.13
197	300	0.233		0.007	0.006		0.254		0.015	−0.006	−1.50	254.66			−1.25	254.07
198	301	0.242		0.013	0.011		0.264		0.011	−0.012	−1.73	259.50			−1.43	258.94
199	302	0.242		0.013	0.013		0.264		0.011	−0.014	−2.17	265.55			−1.86	264.99
200	303	0.250		0.027	0.016		0.274		−0.004	−0.021	−2.42	270.53			−2.02	270.03
201	304	0.250		0.027	0.018		0.274		−0.004	−0.023	−2.90	276.71			−2.48	276.21
202	305	0.250		0.027	0.023		0.274		−0.003	−0.028	−2.99	282.00			−2.50	281.57
203	306	0.250		0.027	0.024		0.275		−0.003	−0.029	−3.32	288.49			−2.80	288.06
204	307	0.250		0.033	0.023		0.275		−0.010	−0.030	−3.12	294.23			−2.59	293.81
205	308	0.250		0.040	0.021		0.276		−0.019	−0.030	−3.17	301.14			−2.62	300.73
206	309	0.250		0.040	0.021		0.276		−0.019	−0.030	−2.98	307.03			−2.42	306.62
207	310	0.242		0.040	0.020		0.267		−0.021	−0.029	−3.13	314.00			−2.59	313.55
208	311	0.242		0.040	0.020		0.267		−0.021	−0.029	−2.99	319.99			−2.43	319.56
209	312	0.233		0.040	0.019		0.256		−0.023	−0.028	−3.13	327.11			−2.61	326.63
210	313	0.233		0.040	0.019		0.256		−0.023	−0.028	−3.08	333.16			−2.54	332.70
211	314	0.225		0.040	0.019		0.247		−0.024	−0.027	−3.29	340.36			−2.76	339.87
212	315	0.217		0.040	0.019		0.238		−0.026	−0.027	−3.17	346.62			−2.65	346.13
213	316	0.200		0.020	0.024		0.218		−0.005	−0.027	−3.51	353.82			−3.07	353.25
214	317	0.200		0.020	0.023		0.218		−0.005	−0.026	−3.59	360.04			−3.14	359.48
215	318	0.192		0.013	0.025		0.209		0.002	−0.027	−3.89	367.42			−3.46	366.85
216	319	0.192		0.013	0.024		0.209		0.002	−0.026	−3.94	373.82			−3.51	373.23
217	320	0.192		0.013	0.027		0.209		0.002	−0.029	−4.45	381.12			−3.97	380.60
218	321	0.192		0.020	0.030		0.209		−0.006	−0.033	−4.58	387.58			−4.00	387.15
219	322	0.192		0.027	0.033		0.210		−0.014	−0.037	−5.12	394.99			−4.44	394.67
220	323	0.192		0.027	0.037		0.210		−0.013	−0.041	−5.15	401.68			−4.36	401.46
221	324	0.192		0.033	0.033		0.210		−0.021	−0.039	−5.51	409.41			−4.76	409.17
222	325	0.192		0.033	0.029		0.210		−0.021	−0.035	−5.23	416.54			−4.57	416.22
223	326	0.192		0.040	0.024		0.211		−0.030	−0.031	−5.46	424.53			−4.83	424.19
224	327	0.192		0.040	0.019		0.210		−0.031	−0.027	−5.13	431.85			−4.57	431.44
225	328	0.183		0.040	0.015		0.200		−0.032	−0.022	−5.31	440.01			−4.83	439.54
226	329	0.183		0.040	0.009		0.200		−0.033	−0.016	−4.99	447.45			−4.56	446.93
227	330	0.017		0.000	0.000		0.018		0.000	0.000	−2.30	458.62			−2.30	457.69
228	331	0.000		0.000	0.001		0.000		0.000	−0.001	−3.00	465.16			−3.00	464.24
229	332	−0.008		0.000	0.000		−0.008		0.000	0.000	−3.41	473.35			−3.42	472.45
230	333	−0.017		0.000	0.000		−0.018		0.000	0.000	−3.39	480.74			−3.39	479.86
231	334	0.050		−0.020	−0.004		0.053		0.025	0.005	−3.53	489.33			−3.45	488.54
232	335	0.067		−0.027	0.001		0.071		0.034	0.001	−3.40	496.95			−3.28	496.23
233	336	0.083		−0.033	0.008		0.088		0.043	−0.004	−3.70	505.50			−3.49	504.88
234	337	0.092		−0.027	0.015		0.098		0.037	−0.012	−3.69	513.13			−3.46	512.55
235	338	0.092		−0.020	0.016		0.098		0.028	−0.014	−4.09	521.70			−3.88	521.12
236	339	0.092		−0.013	0.017		0.098		0.020	−0.015	−3.94	529.59			−3.75	529.01

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 104$																
134	238	0.267		0.013	0.009		0.292		0.016	−0.010	−0.02	102.93			−0.13	106.91
135	239	0.275		0.013	0.011		0.301		0.018	−0.011	−0.31	102.09			−0.44	105.91
136	240	0.258		0.007	0.015		0.282		0.022	−0.014	−0.28	99.85			−0.37	103.57
137	241	0.250		0.000	0.017		0.272		0.029	−0.014	−0.47	99.41			−0.55	103.01
138	242	0.225		−0.013	0.018		0.244		0.039	−0.012	−0.44	97.47			−0.49	100.97
139	243	0.217		−0.020	0.019		0.235		0.046	−0.012	−0.64	97.32			−0.68	100.69
140	244	0.208		−0.020	0.021		0.225		0.045	−0.014	−0.82	95.46			−0.84	98.73
141	245	0.208		−0.027	0.024		0.224		0.054	−0.015	−1.15	95.45			−1.17	98.59
142	246	0.208		−0.020	0.025		0.225		0.045	−0.018	−1.40	93.83			−1.40	96.86
143	247	0.208		−0.027	0.029		0.224		0.054	−0.020	−1.74	94.09			−1.74	97.00
144	248	0.208		−0.020	0.030		0.225		0.046	−0.023	−1.92	92.81			−1.91	95.62
145	249	0.208		−0.013	0.031		0.225		0.037	−0.026	−2.30	93.31			−2.29	96.00
146	250	0.217		−0.007	0.033		0.235		0.032	−0.029	−2.67	92.12			−2.64	94.71
147	251	0.217		0.000	0.034		0.236		0.024	−0.032	−3.12	92.81			−3.09	95.29
148	252	0.217		0.007	0.033		0.236		0.015	−0.033	−3.34	92.05			−3.29	94.44
149	253	0.217		0.007	0.036		0.236		0.015	−0.036	−3.83	92.96			−3.77	95.25
150	254	0.217		0.013	0.035		0.237		0.008	−0.036	−4.12	92.39			−4.05	94.58
151	255	0.225		0.020	0.036		0.246		0.001	−0.039	−4.70	93.46			−4.63	95.56
152	256	0.225		0.027	0.038		0.247		−0.007	−0.043	−4.76	93.38	94.24	0.027	−4.66	95.41
153	257	0.217		0.027	0.034		0.238		−0.009	−0.039	−4.68	95.37			−4.59	97.28
154	258	0.217		0.033	0.029		0.238		−0.016	−0.035	−4.49	95.80			−4.40	97.61
155	259	0.217		0.040	0.024		0.239		−0.025	−0.032	−4.49	97.95	98.28	0.050	−4.41	99.66
156	260	0.208		0.040	0.021		0.228		−0.027	−0.029	−4.12	98.81			−4.04	100.43
157	261	0.208		0.040	0.017		0.228		−0.028	−0.025	−4.34	100.98			−4.27	102.49
158	262	0.208		0.047	0.013		0.229		−0.037	−0.023	−4.26	101.79			−4.18	103.23
159	263	0.208		0.053	0.009		0.229		−0.044	−0.020	−4.60	104.07			−4.52	105.42
160	264	0.200		0.053	0.007		0.220		−0.046	−0.018	−4.57	105.07			−4.48	106.35
161	265	0.200		0.060	0.004		0.220		−0.055	−0.017	−4.92	107.59			−4.82	108.78
162	266	0.208		0.073	0.000		0.230		−0.069	−0.016	−5.04	108.68			−4.89	109.84
163	267	0.200		0.073	−0.004		0.221		−0.071	−0.012	−5.08	111.71			−4.94	112.79
164	268	0.200		0.073	−0.009		0.221		−0.072	−0.007	−4.61	113.62			−4.46	114.64
165	269	0.192		0.073	−0.011		0.212		−0.073	−0.004	−4.28	117.26			−4.13	118.19
166	270	0.183		0.067	−0.007		0.201		−0.067	−0.006	−3.75	119.45			−3.60	120.31
167	271	0.158		0.053	0.002		0.173		−0.053	−0.011	−3.39	123.33			−3.28	124.07
168	272	0.150		0.047	0.004		0.164		−0.047	−0.011	−2.75	125.86			−2.65	126.52
169	273	0.150		0.040	0.003		0.163		−0.038	−0.009	−2.90	129.44			−2.82	130.02
170	274	0.133		0.033	0.006		0.144		−0.032	−0.011	−2.63	131.81			−2.56	132.31
171	275	0.108		0.020	0.011		0.116		−0.019	−0.013	−2.41	135.98			−2.36	136.39
172	276	0.108		0.027	0.003		0.116		−0.027	−0.006	−2.37	138.33			−2.32	138.68
173	277	0.100		0.033	−0.002		0.108		−0.035	−0.002	−2.63	142.21			−2.58	142.51
174	278	0.100		0.040	−0.009		0.108		−0.044	0.005	−2.59	144.78			−2.51	145.04
175	279	0.100		0.040	−0.015		0.108		−0.044	0.010	−2.91	148.81			−2.82	149.02
176	280	0.100		0.047	−0.021		0.108		−0.053	0.016	−2.64	151.81			−2.50	152.02
177	281	−0.100		0.027	−0.001		−0.105		−0.027	0.004	−2.65	156.35			−2.60	156.40
178	282	−0.092		0.027	−0.007		−0.096		−0.028	0.010	−2.52	159.41			−2.46	159.42
179	283	−0.050		0.013	−0.004		−0.053		−0.014	0.005	−2.70	163.96			−2.69	163.88
180	284	−0.017	0.029	0.000	0.000	−0.001	−0.018	−0.039	0.000	0.001	−2.40	167.40			−2.38	167.27
181	285	−0.008	0.038	0.000	0.000	0.000	−0.008	−0.051	0.001	0.001	−2.59	172.14			−2.56	171.97
182	286	0.000		0.000	−0.001		0.000		0.000	0.001	−2.25	175.80			−2.25	175.56
183	287	0.000	0.046	0.000	0.000	−0.001	0.001	−0.062	0.001	0.001	−2.28	180.88			−2.24	180.63
184	288	0.000	0.053	0.000	0.000	−0.001	0.001	−0.071	0.001	0.002	−1.75	184.93			−1.69	184.66
185	289	0.000	0.073	0.000	0.000	−0.002	0.002	−0.098	0.002	0.003	−1.38	190.59			−1.27	190.33
186	290	0.000		0.000	−0.001		0.000		0.000	0.001	−0.19	195.49			−0.19	195.07
187	291	0.000		0.000	−0.002		0.000		0.000	0.002	0.89	202.05			0.89	201.59
188	292	0.000	0.096	0.000	0.000	−0.001	0.004	−0.129	0.004	0.006	0.09	205.13			0.31	204.85
189	293	0.233		−0.013	0.000		0.253		0.040	0.006	0.32	211.01			0.56	210.72
190	294	0.233		−0.007	−0.004		0.253		0.032	0.009	0.16	214.92			0.40	214.60

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{asym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 104																
191	295	0.233		−0.007	−0.005		0.253		0.032	0.010	−0.18	220.41			0.07	220.05
192	296	0.233		−0.007	−0.002		0.253		0.032	0.007	−0.22	224.61			0.03	224.23
193	297	0.225		−0.007	−0.007		0.244		0.030	0.011	−0.52	230.30			−0.27	229.89
194	298	0.233		0.000	0.000		0.253		0.023	0.002	−0.59	234.65			−0.34	234.21
195	299	0.233		0.000	0.002		0.253		0.024	0.000	−0.92	240.49			−0.67	240.01
196	300	0.233		0.007	0.004		0.254		0.015	−0.004	−0.98	245.01			−0.73	244.51
197	301	0.242		0.013	0.007		0.264		0.010	−0.008	−1.46	250.86			−1.19	250.36
198	302	0.242		0.020	0.009		0.265		0.002	−0.012	−1.59	255.49			−1.28	254.99
199	303	0.250		0.027	0.011		0.274		−0.004	−0.016	−2.08	261.48			−1.74	261.00
200	304	0.250		0.027	0.015		0.274		−0.004	−0.020	−2.35	266.14			−1.95	265.69
201	305	0.250		0.033	0.016		0.275		−0.011	−0.023	−2.79	272.34			−2.36	271.91
202	306	0.250		0.033	0.021		0.275		−0.010	−0.028	−2.88	277.33			−2.39	276.94
203	307	0.250		0.033	0.022		0.275		−0.010	−0.029	−3.17	283.85			−2.66	283.46
204	308	0.250		0.040	0.020		0.276		−0.019	−0.029	−2.97	289.29			−2.44	288.91
205	309	0.250		0.040	0.020		0.276		−0.019	−0.029	−3.15	296.06			−2.61	295.67
206	310	0.250		0.040	0.020		0.276		−0.019	−0.029	−2.95	301.66			−2.39	301.27
207	311	0.250		0.047	0.018		0.276		−0.027	−0.029	−3.10	308.62			−2.52	308.24
208	312	0.242		0.047	0.018		0.267		−0.029	−0.029	−2.93	314.35			−2.35	313.95
209	313	0.242		0.053	0.016		0.268		−0.037	−0.028	−3.15	321.37			−2.55	320.99
210	314	0.233		0.047	0.018		0.257		−0.031	−0.028	−3.05	327.18			−2.48	326.76
211	315	0.225		0.040	0.020		0.247		−0.024	−0.028	−3.33	334.30			−2.79	333.83
212	316	0.217		0.040	0.020		0.238		−0.026	−0.028	−3.22	340.26			−2.69	339.79
213	317	0.217		0.040	0.021		0.238		−0.026	−0.029	−3.64	347.39			−3.09	346.92
214	318	0.200		0.027	0.022		0.218		−0.013	−0.027	−3.49	353.53			−3.03	352.98
215	319	0.200		0.027	0.022		0.218		−0.013	−0.027	−3.96	360.74			−3.49	360.19
216	320	0.192		0.020	0.023		0.209		−0.006	−0.026	−3.89	366.96			−3.45	366.39
217	321	0.192		0.020	0.026		0.209		−0.006	−0.029	−4.43	374.25			−3.93	373.71
218	322	0.192		0.027	0.029		0.210		−0.014	−0.034	−4.54	380.42			−3.94	379.99
219	323	0.192		0.033	0.033		0.210		−0.021	−0.039	−5.10	387.81			−4.39	387.50
220	324	0.192		0.033	0.037		0.211		−0.020	−0.043	−5.15	394.19			−4.34	393.99
221	325	0.192		0.040	0.033		0.211		−0.029	−0.040	−5.52	401.91			−4.73	401.69
222	326	0.192		0.040	0.029		0.211		−0.029	−0.036	−5.28	408.72			−4.57	408.41
223	327	0.192		0.040	0.024		0.211		−0.030	−0.031	−5.48	416.74			−4.86	416.35
224	328	0.183		0.040	0.020		0.200		−0.032	−0.027	−5.16	423.76			−4.60	423.31
225	329	0.183		0.040	0.014		0.200		−0.033	−0.021	−5.35	431.92			−4.88	431.39
226	330	0.183		0.047	0.007		0.200		−0.042	−0.016	−5.12	438.98			−4.66	438.46
227	331	0.008		0.000	0.000		0.008		0.000	0.000	−2.76	449.82			−2.76	448.83
228	332	0.000		0.000	0.000		0.000		0.000	0.000	−3.49	456.05			−3.49	455.08
229	333	−0.008		0.000	0.000		−0.008		0.000	0.000	−3.87	464.27			−3.87	463.31
230	334	−0.008		0.000	0.000		−0.008		0.000	0.000	−3.83	471.41			−3.83	470.46
231	335	0.042		−0.020	−0.004		0.045		0.025	0.005	−3.95	480.01			−3.88	479.14
232	336	0.058		−0.027	−0.001		0.062		0.034	0.003	−3.79	487.40			−3.67	486.59
233	337	0.075		−0.027	0.007		0.080		0.035	−0.004	−4.12	495.91			−3.98	495.15
234	338	0.083		−0.027	0.013		0.088		0.036	−0.010	−3.98	503.40			−3.78	502.70
235	339	0.092		−0.020	0.017		0.098		0.028	−0.015	−4.36	511.99			−4.14	511.33
Z = 105																
136	241	0.250		0.013	0.012		0.273		0.013	−0.013	−0.41	109.27			−0.52	113.36
137	242	0.250		0.013	0.014		0.273		0.013	−0.015	−0.64	108.41			−0.75	112.35
138	243	0.225		0.000	0.015		0.244		0.023	−0.013	−0.61	106.45			−0.68	110.29
139	244	0.217		−0.013	0.018		0.235		0.038	−0.012	−0.77	105.95			−0.84	109.66
140	245	0.208		−0.013	0.019		0.225		0.036	−0.014	−0.94	104.08			−0.99	107.67
141	246	0.208		−0.020	0.022		0.225		0.045	−0.015	−1.27	103.70			−1.31	107.17
142	247	0.208		−0.013	0.023		0.225		0.036	−0.018	−1.50	102.06			−1.53	105.41
143	248	0.208		−0.013	0.025		0.225		0.037	−0.020	−1.88	101.91			−1.91	105.14
144	249	0.208		−0.007	0.026		0.225		0.029	−0.022	−2.06	100.60			−2.08	103.71
145	250	0.208		−0.007	0.029		0.225		0.030	−0.025	−2.44	100.72			−2.46	103.72
146	251	0.217		0.007	0.029		0.236		0.015	−0.029	−2.82	99.50			−2.82	102.39

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 105$																
147	252	0.217		0.007	0.031		0.236		0.015	−0.031	−3.30	99.80			−3.30	102.57
148	253	0.217		0.013	0.030		0.237		0.007	−0.031	−3.57	98.94			−3.56	101.62
149	254	0.217		0.020	0.032		0.237		−0.001	−0.035	−4.01	99.54			−3.99	102.11
150	255	0.217		0.020	0.032		0.237		−0.001	−0.035	−4.41	98.83			−4.37	101.31
151	256	0.225		0.027	0.034		0.247		−0.007	−0.039	−4.99	99.55			−4.95	101.92
152	257	0.225		0.033	0.035		0.247		−0.014	−0.041	−5.10	99.40			−5.02	101.69
153	258	0.217		0.033	0.033		0.238		−0.016	−0.039	−5.07	100.97			−5.01	103.15
154	259	0.217		0.040	0.027		0.239		−0.025	−0.035	−4.91	101.34			−4.84	103.42
155	260	0.217		0.040	0.024		0.239		−0.025	−0.032	−4.98	103.07			−4.93	105.03
156	261	0.208		0.040	0.020		0.228		−0.028	−0.028	−4.66	103.85			−4.60	105.72
157	262	0.208		0.047	0.017		0.229		−0.036	−0.027	−4.89	105.66			−4.84	107.43
158	263	0.208		0.053	0.013		0.229		−0.044	−0.024	−4.84	106.41			−4.78	108.10
159	264	0.208		0.060	0.008		0.229		−0.053	−0.021	−5.21	108.33			−5.14	109.92
160	265	0.208		0.060	0.006		0.229		−0.053	−0.019	−5.32	109.16			−5.24	110.68
161	266	0.200		0.067	0.004		0.221		−0.063	−0.018	−5.57	111.42			−5.48	112.86
162	267	0.208		0.073	0.001		0.230		−0.069	−0.017	−5.75	112.42			−5.63	113.80
163	268	0.200		0.073	−0.003		0.221		−0.071	−0.013	−5.79	115.12			−5.67	116.41
164	269	0.200		0.080	−0.009		0.221		−0.080	−0.008	−5.28	117.04			−5.13	118.28
165	270	0.192		0.073	−0.011		0.212		−0.073	−0.004	−4.97	120.32			−4.84	121.46
166	271	0.183		0.067	−0.009		0.201		−0.067	−0.004	−4.40	122.53			−4.27	123.59
167	272	0.167		0.060	−0.003		0.183		−0.060	−0.008	−4.06	126.05			−3.95	127.01
168	273	0.150		0.047	0.003		0.164		−0.047	−0.010	−3.29	128.68			−3.20	129.55
169	274	0.150		0.047	0.000		0.163		−0.047	−0.008	−3.43	131.94			−3.35	132.72
170	275	0.142		0.047	−0.001		0.155		−0.048	−0.006	−3.19	134.26			−3.11	134.98
171	276	0.117		0.027	0.009		0.126		−0.026	−0.012	−3.11	137.95			−3.06	138.57
172	277	0.108		0.033	0.002		0.117		−0.034	−0.006	−2.89	140.46			−2.84	141.01
173	278	0.100		0.033	−0.002		0.108		−0.035	−0.002	−3.14	144.03			−3.09	144.51
174	279	0.100		0.040	−0.008		0.108		−0.044	0.004	−3.11	146.57			−3.03	147.01
175	280	0.100		0.040	−0.014		0.108		−0.044	0.009	−3.42	150.27			−3.34	150.66
176	281	0.100		0.047	−0.020		0.108		−0.053	0.015	−3.15	153.26			−3.02	153.63
177	282	−0.100		0.027	0.000		−0.105		−0.027	0.003	−3.00	157.62			−2.96	157.84
178	283	−0.092		0.027	−0.006		−0.096		−0.028	0.009	−2.85	160.68			−2.80	160.86
179	284	−0.050		0.013	−0.004		−0.053		−0.014	0.005	−3.07	164.88			−3.06	164.96
180	285	−0.042	0.010	0.013	0.001	0.001	−0.044	−0.013	−0.014	0.000	−2.89	168.17			−2.88	168.19
181	286	−0.008	0.049	0.000	0.000	0.000	−0.007	−0.066	0.001	0.002	−2.86	172.80			−2.82	172.80
182	287	0.000	0.045	0.000	0.000	−0.001	0.001	−0.060	0.001	0.001	−2.51	176.46			−2.48	176.40
183	288	0.000	0.053	0.000	0.000	−0.001	0.001	−0.071	0.001	0.002	−2.56	181.21			−2.50	181.12
184	289	0.000	0.058	0.000	0.000	−0.001	0.002	−0.078	0.001	0.002	−2.03	185.23			−1.97	185.10
185	290	0.000		0.000	−0.002		0.000		0.000	0.002	−0.96	191.28			−0.96	191.04
186	291	0.000		0.000	0.000		0.000		0.000	0.000	−0.42	195.51			−0.42	195.22
187	292	0.000	0.092	0.000	0.000	−0.001	0.004	−0.124	0.004	0.005	−0.88	200.21			−0.70	200.06
188	293	0.000	0.097	0.000	0.000	−0.001	0.004	−0.131	0.004	0.006	−0.27	204.69			−0.06	204.53
189	294	0.233		−0.007	−0.002		0.253		0.032	0.007	0.19	210.48			0.40	210.28
190	295	0.233		0.000	−0.004		0.253		0.023	0.006	0.02	214.37			0.23	214.12
191	296	0.233		0.000	−0.005		0.253		0.023	0.007	−0.31	219.55			−0.10	219.27
192	297	0.233		0.000	−0.003		0.253		0.023	0.005	−0.37	223.72			−0.15	223.41
193	298	0.233		0.000	−0.003		0.253		0.023	0.005	−0.70	229.08			−0.48	228.73
194	299	0.233		0.007	0.000		0.254		0.015	0.000	−0.75	233.43			−0.53	233.05
195	300	0.233		0.007	0.001		0.254		0.015	−0.001	−1.09	238.94			−0.88	238.53
196	301	0.242		0.020	0.004		0.265		0.001	−0.007	−1.20	243.41			−0.94	243.00
197	302	0.242		0.020	0.006		0.265		0.002	−0.009	−1.66	248.97			−1.40	248.54
198	303	0.250		0.027	0.010		0.274		−0.005	−0.015	−1.84	253.53			−1.52	253.13
199	304	0.250		0.033	0.010		0.275		−0.012	−0.017	−2.30	259.25			−1.97	258.84
200	305	0.250		0.033	0.014		0.275		−0.011	−0.021	−2.56	263.91			−2.17	263.52
201	306	0.250		0.033	0.016		0.275		−0.011	−0.023	−3.04	269.77			−2.64	269.37
202	307	0.250		0.040	0.019		0.276		−0.019	−0.028	−3.06	274.82			−2.59	274.48
203	308	0.250		0.040	0.020		0.276		−0.019	−0.029	−3.32	281.07			−2.83	280.72

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 105$																
204	309	0.250		0.040	0.019		0.276		−0.019	−0.028	−3.24	286.38			−2.74	286.01
205	310	0.250		0.040	0.020		0.276		−0.019	−0.029	−3.43	292.85			−2.92	292.47
206	311	0.250		0.047	0.017		0.276		−0.028	−0.028	−3.20	298.47			−2.66	298.10
207	312	0.250		0.053	0.015		0.277		−0.035	−0.028	−3.38	305.10			−2.82	304.73
208	313	0.250		0.053	0.015		0.277		−0.035	−0.028	−3.26	310.76			−2.68	310.40
209	314	0.250		0.060	0.013		0.277		−0.043	−0.028	−3.53	317.45			−2.92	317.11
210	315	0.242		0.053	0.015		0.268		−0.037	−0.027	−3.48	323.20			−2.90	322.82
211	316	0.242		0.060	0.014		0.268		−0.045	−0.028	−3.85	329.93			−3.21	329.59
212	317	0.225		0.047	0.019		0.248		−0.033	−0.029	−3.72	335.91			−3.15	335.49
213	318	0.225		0.047	0.020		0.248		−0.033	−0.030	−4.11	342.77			−3.53	342.36
214	319	0.225		0.047	0.023		0.248		−0.032	−0.033	−4.16	348.71			−3.53	348.35
215	320	0.242		0.067	0.021		0.269		−0.052	−0.037	−4.56	355.71			−3.72	355.53
216	321	0.225		0.053	0.026		0.249		−0.039	−0.037	−4.64	361.77			−3.86	361.53
217	322	0.225		0.053	0.029		0.249		−0.038	−0.040	−5.05	368.89			−4.23	368.68
218	323	0.192		0.033	0.031		0.210		−0.021	−0.037	−4.92	375.30			−4.28	374.91
219	324	0.192		0.033	0.035		0.210		−0.021	−0.041	−5.47	382.42			−4.74	382.12
220	325	0.192		0.040	0.038		0.211		−0.028	−0.045	−5.54	388.77			−4.67	388.61
221	326	0.192		0.040	0.035		0.211		−0.029	−0.042	−5.92	396.20			−5.11	395.98
222	327	0.192		0.040	0.031		0.211		−0.029	−0.038	−5.70	402.98			−4.96	402.69
223	328	0.183		0.040	0.029		0.201		−0.031	−0.036	−5.84	410.77			−5.17	410.42
224	329	0.183		0.047	0.024		0.201		−0.040	−0.032	−5.64	417.67			−4.99	417.29
225	330	0.183		0.047	0.017		0.201		−0.041	−0.026	−5.85	425.54			−5.31	425.05
226	331	0.183		0.047	0.010		0.200		−0.041	−0.019	−5.56	432.66			−5.08	432.11
227	332	0.017		0.000	−0.001		0.018		0.000	0.001	−3.26	443.15			−3.26	442.13
228	333	0.000		0.000	0.001		0.000		0.000	−0.001	−3.92	449.46			−3.92	448.44
229	334	−0.008		0.000	0.001		−0.008		0.000	−0.001	−4.30	457.40			−4.31	456.39
230	335	−0.017		0.000	0.001		−0.018		0.000	−0.001	−4.23	464.56			−4.24	463.56
231	336	0.050		−0.020	−0.004		0.053		0.025	0.005	−4.35	472.89			−4.28	471.97
232	337	0.067		−0.027	0.002		0.071		0.034	0.000	−4.16	480.30			−4.04	479.44
233	338	0.075		−0.027	0.007		0.080		0.035	−0.004	−4.51	488.52			−4.37	487.70
234	339	0.083		−0.027	0.014		0.088		0.036	−0.011	−4.36	496.02			−4.16	495.26
$Z = 106$																
138	244	0.250		0.020	0.013		0.274		0.004	−0.016	−0.57	113.98			−0.67	118.18
139	245	0.217		−0.007	0.015		0.235		0.030	−0.011	−0.53	113.66			−0.60	117.74
140	246	0.208		−0.013	0.018		0.225		0.036	−0.013	−0.67	111.44			−0.71	115.41
141	247	0.208		−0.013	0.020		0.225		0.036	−0.015	−1.01	111.01			−1.06	114.85
142	248	0.208		−0.013	0.022		0.225		0.036	−0.017	−1.22	109.02			−1.25	112.73
143	249	0.208		−0.013	0.024		0.225		0.036	−0.019	−1.57	108.87			−1.61	112.45
144	250	0.208		−0.007	0.025		0.225		0.029	−0.021	−1.78	107.16			−1.80	110.62
145	251	0.208		−0.007	0.028		0.225		0.030	−0.024	−2.16	107.26			−2.18	110.60
146	252	0.217		0.013	0.026		0.236		0.007	−0.027	−2.57	105.64			−2.58	108.86
147	253	0.217		0.013	0.029		0.236		0.007	−0.030	−3.06	105.89			−3.06	109.00
148	254	0.217		0.020	0.029		0.237		−0.001	−0.032	−3.35	104.66			−3.34	107.66
149	255	0.225		0.027	0.031		0.247		−0.007	−0.036	−3.90	105.12			−3.88	108.00
150	256	0.225		0.027	0.031		0.247		−0.007	−0.036	−4.35	104.00			−4.31	106.79
151	257	0.225		0.033	0.032		0.247		−0.014	−0.038	−4.83	104.79			−4.79	107.47
152	258	0.225		0.040	0.034		0.248		−0.022	−0.042	−4.95	104.27			−4.87	106.87
153	259	0.225		0.040	0.031		0.248		−0.023	−0.039	−5.07	105.67			−5.00	108.14
154	260	0.217		0.040	0.026		0.239		−0.025	−0.034	−4.85	105.73	106.59	0.040	−4.79	108.10
155	261	0.217		0.040	0.023		0.238		−0.025	−0.031	−4.93	107.43			−4.88	109.68
156	262	0.208		0.047	0.019		0.229		−0.036	−0.029	−4.63	107.83			−4.57	109.99
157	263	0.208		0.053	0.015		0.229		−0.044	−0.026	−4.90	109.57	110.10	0.070	−4.84	111.63
158	264	0.208		0.053	0.011		0.229		−0.044	−0.022	−4.89	109.94			−4.83	111.90
159	265	0.208		0.060	0.007		0.229		−0.053	−0.020	−5.30	111.78			−5.24	113.64
160	266	0.208		0.067	0.004		0.230		−0.061	−0.019	−5.44	112.24			−5.35	114.04
161	267	0.208		0.073	0.000		0.230		−0.069	−0.016	−5.81	114.35			−5.71	116.06
162	268	0.208		0.080	−0.002		0.231		−0.078	−0.016	−5.91	115.09			−5.78	116.75

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 106$																
163	269	0.200		0.080	−0.006		0.222		−0.079	−0.011	−5.97	117.74			−5.85	119.30
164	270	0.200		0.080	−0.012		0.221		−0.080	−0.005	−5.52	119.26			−5.38	120.75
165	271	0.192		0.080	−0.016		0.212		−0.082	−0.001	−5.18	122.54			−5.03	123.94
166	272	0.183		0.073	−0.012		0.201		−0.074	−0.003	−4.59	124.43			−4.45	125.75
167	273	0.167		0.067	−0.009		0.183		−0.069	−0.003	−4.23	127.95			−4.11	129.16
168	274	0.150		0.053	−0.001		0.164		−0.054	−0.008	−3.52	130.19			−3.43	131.29
169	275	0.150		0.053	−0.004		0.164		−0.054	−0.005	−3.66	133.43			−3.57	134.45
170	276	0.125		0.033	0.006		0.135		−0.033	−0.010	−3.35	135.48			−3.29	136.39
171	277	0.100		0.020	0.011		0.108		−0.019	−0.013	−3.11	139.30			−3.07	140.12
172	278	0.100		0.027	0.002		0.108		−0.028	−0.005	−3.13	141.24			−3.10	141.99
173	279	0.100		0.033	−0.004		0.108		−0.035	0.000	−3.55	144.62			−3.51	145.30
174	280	0.100		0.040	−0.010		0.108		−0.044	0.006	−3.56	146.79			−3.48	147.43
175	281	0.100		0.047	−0.017		0.108		−0.053	0.012	−3.92	150.42			−3.81	151.03
176	282	0.100		0.053	−0.023		0.108		−0.060	0.017	−3.62	153.10			−3.46	153.69
177	283	−0.092		0.020	−0.002		−0.096		−0.020	0.004	−3.46	157.46			−3.44	157.85
178	284	−0.083		0.020	−0.008		−0.087		−0.020	0.010	−3.41	160.10			−3.38	160.44
179	285	−0.050		0.013	−0.003		−0.053		−0.014	0.004	−3.63	164.27			−3.62	164.53
180	286	−0.008	0.014	0.000	0.000	0.000	−0.008	−0.019	0.000	0.000	−3.31	167.38			−3.31	167.56
181	287	−0.008	0.031	0.000	0.000	0.000	−0.008	−0.041	0.000	0.001	−3.47	171.80			−3.46	171.95
182	288	0.000	0.013	0.000	0.000	−0.001	0.000	−0.017	0.000	0.000	−3.10	175.16			−3.10	175.23
183	289	0.000		0.000	−0.001		0.000		0.000	0.001	−3.15	179.89			−3.15	179.90
184	290	0.000		0.000	−0.001		0.000		0.000	0.001	−2.54	183.68			−2.54	183.64
185	291	0.000		0.000	−0.002		0.000		0.000	0.002	−1.52	189.66			−1.52	189.57
186	292	0.000	0.076	0.000	0.000	−0.001	0.003	−0.102	0.002	0.004	−1.42	193.13			−1.30	193.11
187	293	0.000	0.087	0.000	0.000	−0.002	0.003	−0.117	0.003	0.005	−1.10	198.59			−0.95	198.56
188	294	0.000	0.092	0.000	0.000	−0.001	0.004	−0.124	0.004	0.005	−0.43	202.81			−0.24	202.77
189	295	0.000	0.099	0.000	0.000	0.000	0.005	−0.133	0.004	0.006	−0.27	208.30			−0.05	208.24
190	296	0.233		0.000	−0.006		0.253		0.023	0.008	0.25	212.56			0.47	212.45
191	297	0.233		−0.007	−0.006		0.253		0.032	0.011	−0.02	217.78			0.21	217.65
192	298	0.233		0.000	−0.005		0.253		0.023	0.007	−0.13	221.59			0.09	221.41
193	299	0.233		0.000	−0.005		0.253		0.023	0.007	−0.46	226.94			−0.23	226.71
194	300	0.242		0.013	0.000		0.264		0.009	−0.001	−0.51	230.98			−0.27	230.73
195	301	0.242		0.013	0.002		0.264		0.010	−0.003	−0.89	236.45			−0.65	236.16
196	302	0.242		0.020	0.005		0.265		0.002	−0.008	−1.02	240.59			−0.75	240.29
197	303	0.250		0.027	0.008		0.274		−0.005	−0.013	−1.46	246.15			−1.17	245.85
198	304	0.250		0.033	0.010		0.275		−0.012	−0.017	−1.66	250.39			−1.32	250.10
199	305	0.250		0.033	0.011		0.275		−0.012	−0.018	−2.17	256.05			−1.83	255.73
200	306	0.250		0.033	0.015		0.275		−0.011	−0.022	−2.43	260.40			−2.04	260.10
201	307	0.250		0.040	0.016		0.275		−0.019	−0.025	−2.86	266.30			−2.44	266.01
202	308	0.250		0.040	0.020		0.276		−0.019	−0.029	−2.97	270.96			−2.48	270.70
203	309	0.250		0.040	0.021		0.276		−0.019	−0.030	−3.20	277.22			−2.71	276.94
204	310	0.250		0.040	0.020		0.276		−0.019	−0.029	−3.15	282.21			−2.64	281.92
205	311	0.250		0.047	0.018		0.276		−0.027	−0.029	−3.30	288.70			−2.78	288.40
206	312	0.250		0.047	0.018		0.276		−0.027	−0.029	−3.13	293.96			−2.58	293.67
207	313	0.250		0.053	0.016		0.277		−0.035	−0.029	−3.34	300.55			−2.78	300.25
208	314	0.250		0.060	0.015		0.277		−0.043	−0.030	−3.24	305.91			−2.62	305.64
209	315	0.250		0.067	0.013		0.278		−0.052	−0.030	−3.57	312.52			−2.91	312.28
210	316	0.250		0.067	0.014		0.278		−0.052	−0.031	−3.56	317.94			−2.86	317.72
211	317	0.250		0.067	0.014		0.278		−0.052	−0.031	−3.93	324.67			−3.22	324.44
212	318	0.250		0.073	0.016		0.279		−0.058	−0.034	−3.98	330.17			−3.17	330.03
213	319	0.250		0.073	0.017		0.279		−0.058	−0.035	−4.31	337.08			−3.47	336.95
214	320	0.250		0.073	0.018		0.279		−0.058	−0.036	−4.20	342.90			−3.32	342.80
215	321	0.250		0.080	0.018		0.280		−0.066	−0.038	−4.43	350.05			−3.47	350.02
216	322	0.242		0.073	0.022		0.270		−0.059	−0.040	−4.40	355.94			−3.45	355.89
217	323	0.242		0.073	0.020		0.270		−0.060	−0.038	−4.55	363.31			−3.63	363.22
218	324	0.225		0.060	0.030		0.250		−0.046	−0.043	−4.89	368.97			−3.96	368.88
219	325	0.200		0.047	0.038		0.221		−0.035	−0.047	−5.51	376.01			−4.59	375.90

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 106$																
220	326	0.192		0.040	0.041		0.211		−0.028	−0.048	−5.45	382.21			−4.51	382.11
221	327	0.192		0.040	0.038		0.211		−0.028	−0.045	−5.82	389.64			−4.95	389.47
222	328	0.183		0.040	0.034		0.201		−0.030	−0.041	−5.47	396.26			−4.70	395.99
223	329	0.183		0.047	0.030		0.201		−0.039	−0.038	−5.81	403.86			−5.06	403.57
224	330	0.183		0.047	0.023		0.201		−0.040	−0.032	−5.55	410.53			−4.93	410.12
225	331	0.183		0.047	0.016		0.201		−0.041	−0.025	−5.76	418.39			−5.23	417.87
226	332	0.008		0.000	0.001		0.008		0.000	−0.001	−2.74	427.96			−2.75	426.91
227	333	0.008		0.000	0.000		0.008		0.000	0.000	−3.78	435.12			−3.78	434.08
228	334	0.000		0.000	0.001		0.000		0.000	−0.001	−4.53	441.05			−4.53	440.01
229	335	0.000		0.000	0.001		0.000		0.000	−0.001	−4.84	449.06			−4.84	448.02
230	336	−0.008		0.000	0.000		−0.008		0.000	0.000	−4.77	455.95			−4.77	454.91
231	337	0.008		0.000	0.000		0.008		0.000	0.000	−4.96	464.21			−4.96	463.18
232	338	0.058		−0.027	−0.001		0.062		0.034	0.003	−4.61	471.51			−4.50	470.59
233	339	0.075		−0.027	0.007		0.080		0.035	−0.004	−4.86	479.82			−4.72	478.94
$Z = 107$																
140	247	0.242		0.027	0.013		0.265		−0.006	−0.018	−1.02	120.61			−1.12	124.91
141	248	0.208		−0.007	0.018		0.225		0.029	−0.014	−1.12	120.06			−1.18	124.25
142	249	0.208		0.000	0.019		0.226		0.020	−0.017	−1.34	118.01			−1.40	122.08
143	250	0.208		0.000	0.021		0.226		0.020	−0.019	−1.68	117.50			−1.74	121.43
144	251	0.217		0.013	0.022		0.236		0.007	−0.023	−2.05	115.61			−2.10	119.41
145	252	0.217		0.013	0.024		0.236		0.007	−0.025	−2.45	115.32			−2.50	118.98
146	253	0.217		0.020	0.024		0.237		−0.002	−0.027	−2.73	113.79			−2.76	117.34
147	254	0.217		0.020	0.026		0.237		−0.001	−0.029	−3.21	113.69			−3.24	117.12
148	255	0.225		0.033	0.025		0.247		−0.015	−0.032	−3.59	112.34			−3.61	115.66
149	256	0.225		0.033	0.028		0.247		−0.015	−0.034	−4.07	112.51			−4.08	115.71
150	257	0.225		0.040	0.027		0.248		−0.023	−0.035	−4.51	111.38			−4.50	114.47
151	258	0.225		0.040	0.030		0.248		−0.023	−0.038	−5.02	111.77			−5.01	114.75
152	259	0.225		0.040	0.032		0.248		−0.023	−0.040	−5.22	111.13			−5.19	114.02
153	260	0.217		0.040	0.030		0.239		−0.025	−0.038	−5.28	112.24			−5.25	115.01
154	261	0.217		0.047	0.025		0.239		−0.034	−0.035	−5.19	112.15			−5.15	114.82
155	262	0.217		0.047	0.021		0.239		−0.034	−0.031	−5.31	113.45			−5.29	115.99
156	263	0.217		0.053	0.017		0.239		−0.042	−0.028	−5.17	113.68			−5.12	116.12
157	264	0.208		0.053	0.015		0.229		−0.044	−0.026	−5.37	115.14			−5.33	117.47
158	265	0.208		0.060	0.011		0.230		−0.052	−0.024	−5.40	115.43			−5.35	117.67
159	266	0.208		0.067	0.007		0.230		−0.061	−0.022	−5.84	116.90			−5.78	119.04
160	267	0.208		0.073	0.004		0.230		−0.069	−0.020	−6.00	117.30			−5.93	119.37
161	268	0.208		0.073	0.001		0.230		−0.069	−0.017	−6.41	119.04			−6.34	121.00
162	269	0.208		0.080	−0.001		0.231		−0.077	−0.017	−6.55	119.71			−6.44	121.61
163	270	0.200		0.080	−0.006		0.222		−0.079	−0.011	−6.61	122.03			−6.51	123.82
164	271	0.200		0.080	−0.012		0.221		−0.080	−0.005	−6.17	123.50			−6.05	125.23
165	272	0.200		0.087	−0.020		0.221		−0.089	0.001	−5.84	126.43			−5.70	128.09
166	273	0.192		0.080	−0.017		0.212		−0.082	0.000	−5.26	128.30			−5.11	129.86
167	274	0.175		0.073	−0.014		0.192		−0.076	0.000	−4.93	131.45			−4.80	132.91
168	275	0.150		0.060	−0.007		0.164		−0.063	−0.003	−4.11	133.76			−4.02	135.11
169	276	0.150		0.060	−0.009		0.164		−0.063	−0.001	−4.23	136.68			−4.14	137.95
170	277	0.133		0.047	−0.004		0.145		−0.049	−0.003	−4.01	138.63			−3.94	139.79
171	278	0.100		0.020	0.010		0.108		−0.019	−0.012	−3.69	142.20			−3.66	143.24
172	279	0.100		0.027	0.002		0.108		−0.028	−0.005	−3.72	144.12			−3.68	145.08
173	280	0.100		0.033	−0.004		0.108		−0.035	0.000	−4.13	147.17			−4.09	148.06
174	281	0.100		0.040	−0.012		0.108		−0.044	0.008	−4.11	149.34			−4.05	150.18
175	282	0.100		0.047	−0.018		0.108		−0.053	0.013	−4.49	152.63			−4.39	153.43
176	283	0.100		0.053	−0.023		0.108		−0.060	0.017	−4.17	155.31			−4.02	156.10
177	284	0.092		0.047	−0.021		0.099		−0.054	0.016	−4.21	159.15			−4.09	159.83
178	285	−0.083		0.020	−0.007		−0.087		−0.020	0.009	−3.88	162.04			−3.84	162.58
179	286	−0.050		0.013	−0.003		−0.053		−0.014	0.004	−4.14	165.85			−4.14	166.29
180	287	−0.008	0.025	0.000	0.000	0.000	−0.008	−0.033	0.000	0.000	−3.79	168.97			−3.78	169.35
181	288	−0.008	0.035	0.000	0.000	0.000	−0.008	−0.047	0.001	0.001	−3.96	173.06			−3.94	173.39

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 107$																
182	289	0.000		0.000	−0.001		0.000		0.000	0.001	−3.61	176.39			−3.61	176.63
183	290	0.000		0.000	−0.001		0.000		0.000	0.001	−3.63	180.82			−3.63	181.00
184	291	0.000		0.000	−0.001		0.000		0.000	0.001	−3.02	184.59			−3.02	184.72
185	292	0.000	0.069	0.000	0.000	−0.002	0.002	−0.093	0.002	0.003	−2.46	189.79			−2.37	189.95
186	293	0.000	0.075	0.000	0.000	−0.001	0.003	−0.101	0.002	0.004	−1.85	193.76			−1.74	193.89
187	294	0.000	0.086	0.000	0.000	−0.002	0.003	−0.116	0.003	0.005	−1.50	198.93			−1.36	199.04
188	295	0.000	0.091	0.000	0.000	−0.001	0.004	−0.123	0.004	0.005	−0.82	203.15			−0.65	203.23
189	296	0.000	0.097	0.000	0.000	0.000	0.004	−0.131	0.004	0.006	−0.63	208.35			−0.44	208.41
190	297	0.242		0.007	−0.008		0.264		0.016	0.008	0.21	212.92			0.42	212.94
191	298	0.233		0.000	−0.009		0.254		0.023	0.011	−0.13	217.76			0.08	217.74
192	299	0.233		0.007	−0.007		0.254		0.014	0.007	−0.21	221.58			−0.01	221.51
193	300	0.233		0.007	−0.007		0.254		0.014	0.007	−0.55	226.61			−0.35	226.49
194	301	0.242		0.013	−0.002		0.264		0.009	0.001	−0.58	230.66			−0.36	230.51
195	302	0.242		0.020	−0.002		0.264		0.001	−0.001	−0.98	235.80			−0.76	235.61
196	303	0.250		0.027	0.002		0.274		−0.006	−0.008	−1.09	239.94			−0.83	239.75
197	304	0.250		0.033	0.002		0.274		−0.013	−0.009	−1.55	245.18			−1.29	244.96
198	305	0.250		0.033	0.006		0.275		−0.012	−0.013	−1.77	249.38			−1.48	249.16
199	306	0.250		0.040	0.006		0.275		−0.021	−0.015	−2.28	254.75			−1.96	254.50
200	307	0.250		0.040	0.009		0.275		−0.020	−0.018	−2.51	259.11			−2.16	258.87
201	308	0.250		0.040	0.012		0.275		−0.020	−0.021	−2.99	264.67			−2.62	264.41
202	309	0.250		0.040	0.016		0.275		−0.019	−0.025	−3.08	269.34			−2.66	269.10
203	310	0.250		0.040	0.016		0.275		−0.019	−0.025	−3.30	275.31			−2.88	275.04
204	311	0.250		0.047	0.014		0.276		−0.028	−0.025	−3.24	280.29			−2.78	280.03
205	312	0.250		0.053	0.012		0.276		−0.035	−0.025	−3.43	286.45			−2.96	286.17
206	313	0.250		0.053	0.011		0.276		−0.035	−0.024	−3.27	291.70			−2.78	291.41
207	314	0.250		0.060	0.009		0.277		−0.044	−0.024	−3.51	297.95			−3.00	297.67
208	315	0.250		0.067	0.007		0.278		−0.053	−0.024	−3.43	303.27			−2.85	303.03
209	316	0.250		0.073	0.007		0.278		−0.060	−0.026	−3.79	309.56			−3.17	309.35
210	317	0.250		0.073	0.008		0.278		−0.060	−0.027	−3.80	314.95			−3.14	314.75
211	318	0.250		0.080	0.009		0.279		−0.068	−0.030	−4.25	321.30			−3.52	321.16
212	319	0.250		0.080	0.010		0.279		−0.067	−0.030	−4.26	326.84			−3.48	326.72
213	320	0.250		0.080	0.012		0.279		−0.067	−0.032	−4.61	333.45			−3.80	333.33
214	321	0.250		0.080	0.013		0.279		−0.067	−0.033	−4.45	339.30			−3.62	339.20
215	322	0.250		0.087	0.011		0.280		−0.075	−0.033	−4.62	346.24			−3.71	346.19
216	323	0.242		0.080	0.015		0.270		−0.068	−0.035	−4.57	352.13			−3.69	352.04
217	324	0.242		0.080	0.013		0.270		−0.069	−0.033	−4.72	359.21			−3.86	359.09
218	325	0.233		0.073	0.017		0.260		−0.062	−0.034	−4.77	365.16			−3.93	365.00
219	326	0.200		0.047	0.034		0.221		−0.036	−0.043	−5.60	371.71			−4.82	371.48
220	327	0.192		0.047	0.036		0.212		−0.037	−0.045	−5.56	377.88			−4.73	377.70
221	328	0.192		0.047	0.034		0.212		−0.037	−0.043	−5.97	384.99			−5.17	384.77
222	329	0.183		0.047	0.032		0.202		−0.039	−0.040	−5.70	391.53			−4.95	391.25
223	330	0.183		0.047	0.028		0.201		−0.039	−0.036	−6.01	398.87			−5.33	398.51
224	331	0.183		0.053	0.021		0.201		−0.047	−0.031	−5.83	405.46			−5.20	405.05
225	332	0.183		0.053	0.014		0.201		−0.048	−0.024	−6.09	412.99			−5.55	412.48
226	333	0.008		0.000	0.001		0.008		0.000	−0.001	−3.36	422.26			−3.37	421.21
227	334	0.008		0.000	0.000		0.008		0.000	0.000	−4.41	429.14			−4.41	428.08
228	335	0.000		0.000	0.001		0.000		0.000	−0.001	−5.17	435.05			−5.17	433.99
229	336	0.000		0.000	0.001		0.000		0.000	−0.001	−5.47	442.80			−5.47	441.74
230	337	−0.008		0.000	0.000		−0.008		0.000	0.000	−5.37	449.71			−5.38	448.65
231	338	0.008		0.000	0.000		0.008		0.000	0.000	−5.55	457.71			−5.55	456.65
232	339	0.058		−0.027	0.000		0.062		0.034	0.002	−5.11	465.09			−5.00	464.14
$Z = 108$																
142	250	0.208		0.000	0.016		0.226		0.020	−0.014	−1.01	125.82			−1.07	130.28
143	251	0.208		−0.007	0.020		0.225		0.029	−0.016	−1.33	125.31			−1.38	129.62
144	252	0.208		0.007	0.019		0.226		0.012	−0.019	−1.58	123.16			−1.63	127.34
145	253	0.208		0.007	0.021		0.226		0.012	−0.021	−1.97	122.85			−2.01	126.89
146	254	0.217		0.020	0.020		0.237		−0.002	−0.023	−2.37	120.83			−2.41	124.75

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 108$																
147	255	0.217		0.020	0.023		0.237		−0.002	−0.026	−2.85	120.71			−2.88	124.49
148	256	0.217		0.027	0.022		0.237		−0.010	−0.027	−3.20	119.03			−3.22	122.69
149	257	0.217		0.033	0.022		0.238		−0.017	−0.028	−3.67	119.17			−3.70	122.71
150	258	0.217		0.033	0.024		0.238		−0.017	−0.030	−4.12	117.67			−4.12	121.10
151	259	0.217		0.033	0.028		0.238		−0.017	−0.034	−4.62	118.05			−4.61	121.36
152	260	0.217		0.040	0.029		0.239		−0.025	−0.037	−4.80	117.07			−4.78	120.29
153	261	0.217		0.040	0.026		0.239		−0.025	−0.034	−4.96	118.05			−4.94	121.14
154	262	0.217		0.047	0.019		0.239		−0.034	−0.029	−4.91	117.57			−4.89	120.54
155	263	0.217		0.053	0.015		0.239		−0.042	−0.027	−5.07	118.80			−5.05	121.65
156	264	0.208		0.053	0.012		0.229		−0.044	−0.023	−4.86	118.73			−4.84	121.48
157	265	0.208		0.060	0.009		0.230		−0.053	−0.022	−5.21	120.02			−5.18	122.66
158	266	0.208		0.067	0.005		0.230		−0.061	−0.020	−5.27	119.94			−5.22	122.49
159	267	0.208		0.067	0.002		0.230		−0.062	−0.017	−5.75	121.34			−5.70	123.78
160	268	0.208		0.073	−0.001		0.230		−0.069	−0.015	−5.95	121.36			−5.89	123.71
161	269	0.208		0.080	−0.004		0.231		−0.078	−0.014	−6.38	123.05			−6.30	125.31
162	270	0.208		0.087	−0.006		0.231		−0.086	−0.013	−6.54	123.36			−6.42	125.56
163	271	0.200		0.087	−0.009		0.222		−0.088	−0.010	−6.64	125.60			−6.53	127.69
164	272	0.200		0.087	−0.015		0.222		−0.089	−0.004	−6.23	126.72			−6.09	128.74
165	273	0.200		0.087	−0.021		0.221		−0.090	0.002	−5.93	129.59			−5.79	131.52
166	274	0.192		0.087	−0.020		0.212		−0.091	0.002	−5.31	131.15			−5.15	133.01
167	275	0.167		0.073	−0.015		0.183		−0.077	0.002	−4.90	134.36			−4.78	136.08
168	276	0.150		0.060	−0.007		0.164		−0.063	−0.003	−4.24	136.18			−4.15	137.78
169	277	0.133		0.047	−0.001		0.145		−0.049	−0.006	−4.32	139.12			−4.26	140.60
170	278	0.100		0.020	0.012		0.108		−0.019	−0.014	−3.68	141.14			−3.65	142.51
171	279	0.100		0.020	0.007		0.108		−0.019	−0.009	−4.11	143.95			−4.09	145.22
172	280	0.100		0.033	−0.002		0.108		−0.035	−0.002	−4.20	145.47			−4.16	146.68
173	281	0.100		0.040	−0.006		0.108		−0.044	0.002	−4.64	148.47			−4.59	149.61
174	282	0.100		0.040	−0.013		0.108		−0.044	0.009	−4.59	150.34			−4.52	151.42
175	283	0.092		0.047	−0.019		0.099		−0.053	0.014	−4.97	153.61			−4.87	154.64
176	284	0.092		0.053	−0.024		0.099		−0.061	0.018	−4.72	155.90			−4.57	156.90
177	285	0.083		0.047	−0.021		0.089		−0.054	0.017	−4.79	159.68			−4.67	160.58
178	286	−0.075		0.020	−0.007		−0.079		−0.021	0.008	−4.44	162.27			−4.41	163.01
179	287	−0.025		0.000	−0.002		−0.026		0.000	0.002	−4.77	165.99			−4.77	166.63
180	288	−0.008		0.000	0.000		−0.008		0.000	0.000	−4.47	168.74			−4.47	169.30
181	289	−0.008		0.000	0.000		−0.008		0.000	0.000	−4.66	172.79			−4.66	173.29
182	290	0.000		0.000	−0.001		0.000		0.000	0.001	−4.21	175.89			−4.21	176.32
183	291	0.000		0.000	−0.001		0.000		0.000	0.001	−4.22	180.32			−4.22	180.69
184	292	0.000		0.000	−0.001		0.000		0.000	0.001	−3.59	183.79			−3.59	184.10
185	293	0.000	0.056	0.000	0.000	−0.002	0.001	−0.075	0.001	0.002	−2.81	189.20			−2.76	189.50
186	294	0.000	0.060	0.000	0.000	−0.001	0.002	−0.081	0.002	0.002	−2.13	192.91			−2.06	193.17
187	295	0.000	0.076	0.000	0.000	−0.002	0.003	−0.102	0.002	0.004	−1.67	198.18			−1.56	198.42
188	296	0.000	0.081	0.000	0.000	−0.001	0.003	−0.109	0.003	0.004	−0.94	202.13			−0.81	202.35
189	297	0.000	0.091	0.000	0.000	0.000	0.004	−0.123	0.004	0.005	−0.67	207.41			−0.50	207.60
190	298	0.000		0.000	−0.001		0.000		0.000	0.001	1.49	212.97			1.49	212.94
191	299	0.242		0.000	−0.011		0.264		0.024	0.014	0.11	216.76			0.34	216.92
192	300	0.242		0.000	−0.008		0.264		0.025	0.011	0.08	220.32			0.31	220.43
193	301	0.242		0.000	−0.009		0.264		0.025	0.012	−0.23	225.36			0.00	225.42
194	302	0.242		0.007	−0.007		0.264		0.016	0.007	−0.33	229.04			−0.09	229.05
195	303	0.242		0.013	−0.006		0.264		0.009	0.005	−0.71	234.18			−0.48	234.13
196	304	0.242		0.020	−0.003		0.264		0.001	0.000	−0.82	238.01			−0.59	237.93
197	305	0.250		0.027	−0.002		0.274		−0.006	−0.004	−1.28	243.25			−1.03	243.14
198	306	0.250		0.033	0.001		0.274		−0.013	−0.008	−1.48	247.17			−1.19	247.06
199	307	0.250		0.033	0.003		0.274		−0.013	−0.010	−1.98	252.53			−1.69	252.37
200	308	0.250		0.040	0.005		0.275		−0.021	−0.014	−2.18	256.61			−1.85	256.47
201	309	0.250		0.040	0.007		0.275		−0.021	−0.016	−2.64	262.17			−2.30	262.00
202	310	0.250		0.040	0.012		0.275		−0.020	−0.021	−2.72	266.55			−2.33	266.39
203	311	0.250		0.040	0.012		0.275		−0.020	−0.021	−2.94	272.51			−2.56	272.31

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 108																
204	312	0.250		0.047	0.009		0.276		−0.029	−0.020	−2.88	277.20			−2.46	277.00
205	313	0.250		0.053	0.007		0.276		−0.036	−0.020	−3.07	283.35			−2.63	283.13
206	314	0.250		0.060	0.004		0.277		−0.045	−0.019	−2.90	288.30			−2.42	288.10
207	315	0.250		0.067	0.002		0.277		−0.053	−0.019	−3.16	294.54			−2.64	294.34
208	316	0.250		0.073	0.001		0.278		−0.061	−0.020	−3.08	299.56			−2.50	299.40
209	317	0.250		0.073	0.001		0.278		−0.061	−0.020	−3.46	305.83			−2.88	305.64
210	318	0.250		0.080	0.002		0.279		−0.069	−0.023	−3.49	310.90			−2.82	310.79
211	319	0.250		0.080	0.003		0.279		−0.069	−0.024	−3.93	317.26			−3.24	317.13
212	320	0.258		0.093	0.002		0.289		−0.082	−0.027	−3.94	322.51			−3.07	322.54
213	321	0.250		0.087	0.007		0.280		−0.076	−0.029	−4.30	329.09			−3.48	329.05
214	322	0.250		0.087	0.007		0.280		−0.076	−0.029	−4.12	334.68			−3.28	334.64
215	323	0.250		0.087	0.005		0.280		−0.076	−0.028	−4.28	341.61			−3.45	341.53
216	324	0.250		0.087	0.003		0.280		−0.077	−0.026	−3.99	347.46			−3.15	347.38
217	325	0.242		0.080	0.008		0.270		−0.070	−0.028	−4.36	354.32			−3.56	354.17
218	326	0.233		0.080	0.009		0.260		−0.071	−0.028	−4.33	360.05			−3.52	359.91
219	327	0.200		0.053	0.028		0.221		−0.043	−0.038	−5.21	366.55			−4.48	366.30
220	328	0.117		0.040	−0.008		0.127		−0.043	0.003	−2.14	375.46			−1.94	374.68
221	329	0.108		0.047	−0.012		0.117		−0.052	0.006	−2.40	382.71			−2.14	381.98
222	330	0.108		0.047	−0.013		0.117		−0.052	0.007	−2.59	388.52			−2.31	387.78
223	331	0.108		0.047	−0.014		0.117		−0.052	0.008	−3.13	395.62			−2.84	394.89
224	332	0.175		0.053	0.015		0.192		−0.049	−0.024	−5.46	399.43			−4.93	398.92
225	333	0.050		0.020	−0.004		0.053		−0.023	0.003	−3.23	409.43			−3.18	408.44
226	334	0.008		0.000	0.000		0.008		0.000	0.000	−3.96	414.97			−3.97	413.92
227	335	0.008		0.000	0.000		0.008		0.000	0.000	−5.01	421.83			−5.02	420.77
228	336	0.000		0.000	0.001		0.000		0.000	−0.001	−5.79	427.46			−5.79	426.40
229	337	−0.008		0.000	0.001		−0.008		0.000	−0.001	−6.08	435.21			−6.09	434.14
230	338	−0.008		0.000	0.001		−0.008		0.000	−0.001	−5.95	441.88			−5.96	440.81
231	339	−0.008		0.000	0.000		−0.008		0.000	0.000	−6.11	449.89			−6.11	448.82
Z = 109 (Mt)																
144	253	0.208		0.020	0.013		0.227		−0.004	−0.016	−1.56	132.66			−1.63	137.22
145	254	0.208		0.020	0.014		0.227		−0.004	−0.017	−1.96	131.99			−2.03	136.39
146	255	0.208		0.027	0.014		0.227		−0.013	−0.019	−2.24	130.05			−2.30	134.34
147	256	0.208		0.027	0.017		0.227		−0.012	−0.022	−2.68	129.61			−2.74	133.75
148	257	0.217		0.033	0.016		0.238		−0.018	−0.023	−3.17	127.75			−3.22	131.77
149	258	0.217		0.040	0.015		0.238		−0.026	−0.023	−3.63	127.55			−3.69	131.43
150	259	0.217		0.040	0.018		0.238		−0.026	−0.026	−4.09	126.01			−4.12	129.77
151	260	0.217		0.040	0.022		0.238		−0.026	−0.030	−4.58	126.04			−4.61	129.68
152	261	0.217		0.047	0.021		0.239		−0.034	−0.031	−4.78	125.02			−4.79	128.55
153	262	0.208		0.047	0.021		0.229		−0.036	−0.031	−4.77	125.82			−4.78	129.22
154	263	0.208		0.053	0.014		0.229		−0.044	−0.025	−4.80	125.23			−4.80	128.52
155	264	0.208		0.053	0.011		0.229		−0.044	−0.022	−5.04	126.03			−5.05	129.19
156	265	0.208		0.060	0.006		0.229		−0.053	−0.019	−5.04	125.72			−5.03	128.78
157	266	0.208		0.067	0.004		0.230		−0.061	−0.019	−5.39	126.65			−5.39	129.60
158	267	0.200		0.067	0.001		0.221		−0.063	−0.015	−5.41	126.59			−5.39	129.44
159	268	0.200		0.073	−0.002		0.221		−0.071	−0.014	−5.93	127.60			−5.90	130.34
160	269	0.208		0.080	−0.005		0.231		−0.078	−0.013	−6.25	127.48			−6.20	130.13
161	270	0.200		0.080	−0.006		0.222		−0.079	−0.011	−6.65	128.85			−6.60	131.40
162	271	0.208		0.087	−0.010		0.231		−0.087	−0.010	−6.92	129.03			−6.83	131.49
163	272	0.200		0.087	−0.012		0.222		−0.088	−0.007	−7.06	130.89			−6.98	133.25
164	273	0.200		0.087	−0.017		0.222		−0.089	−0.002	−6.67	131.96			−6.56	134.24
165	274	0.200		0.093	−0.023		0.222		−0.097	0.003	−6.36	134.51			−6.23	136.71
166	275	0.192		0.087	−0.022		0.212		−0.091	0.004	−5.78	135.99			−5.65	138.10
167	276	0.183		0.087	−0.024		0.202		−0.092	0.006	−5.46	138.78			−5.32	140.80
168	277	0.150		0.060	−0.009		0.164		−0.063	−0.001	−4.81	140.57			−4.73	142.43
169	278	0.125		0.040	0.005		0.136		−0.041	−0.010	−4.82	143.25			−4.78	144.98
170	279	0.100		0.020	0.011		0.108		−0.019	−0.013	−4.31	145.12			−4.28	146.74
171	280	0.100		0.027	0.006		0.108		−0.028	−0.009	−4.77	147.55			−4.75	149.09

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 109$ (Mt)																
172	281	0.100		0.033	−0.002		0.108		−0.035	−0.002	−4.78	149.14			−4.74	150.60
173	282	0.100		0.040	−0.006		0.108		−0.044	0.002	−5.18	151.85			−5.13	153.23
174	283	0.100		0.047	−0.013		0.108		−0.053	0.008	−5.20	153.63			−5.12	154.96
175	284	0.100		0.053	−0.021		0.108		−0.060	0.015	−5.55	156.60			−5.44	157.88
176	285	0.100		0.060	−0.027		0.108		−0.069	0.020	−5.23	158.94			−5.06	160.20
177	286	0.083		0.047	−0.019		0.089		−0.054	0.015	−5.27	162.42			−5.17	163.53
178	287	−0.075		0.020	−0.007		−0.079		−0.021	0.008	−5.07	164.85			−5.04	165.81
179	288	−0.017		0.000	−0.001		−0.018		0.000	0.001	−5.46	168.18			−5.46	169.04
180	289	0.000		0.000	0.000		0.000		0.000	0.000	−5.12	170.95			−5.13	171.73
181	290	0.000		0.000	−0.001		0.000		0.000	0.001	−5.32	174.68			−5.32	175.39
182	291	0.000		0.000	−0.001		0.000		0.000	0.001	−4.86	177.76			−4.86	178.40
183	292	0.000		0.000	−0.001		0.000		0.000	0.001	−4.86	181.88			−4.86	182.46
184	293	0.000		0.000	−0.001		0.000		0.000	0.001	−4.23	185.34			−4.23	185.85
185	294	0.000	0.051	0.000	0.000	−0.001	0.001	−0.068	0.001	0.002	−3.39	190.49			−3.35	190.97
186	295	0.000	0.054	0.000	0.000	−0.001	0.001	−0.072	0.001	0.002	−2.70	194.19			−2.65	194.62
187	296	0.000	0.071	0.000	0.000	−0.001	0.002	−0.095	0.002	0.003	−2.15	199.24			−2.06	199.65
188	297	0.000	0.075	0.000	0.000	−0.001	0.003	−0.101	0.002	0.004	−1.39	203.21			−1.28	203.58
189	298	0.000		0.000	0.000		0.000		0.000	0.000	0.19	209.47			0.19	209.67
190	299	0.000	0.089	0.000	0.000	0.000	0.004	−0.120	0.003	0.005	−0.41	212.27			−0.25	212.57
191	300	0.000	0.096	0.000	0.000	0.000	0.004	−0.129	0.004	0.006	−0.21	217.33			−0.02	217.60
192	301	0.242		0.000	−0.012		0.264		0.024	0.015	−0.02	221.10			0.22	221.37
193	302	0.242		0.000	−0.012		0.264		0.024	0.015	−0.32	225.84			−0.09	226.05
194	303	0.242		0.007	−0.010		0.264		0.016	0.010	−0.39	229.52			−0.17	229.68
195	304	0.242		0.013	−0.010		0.264		0.008	0.009	−0.76	234.36			−0.55	234.45
196	305	0.242		0.020	−0.008		0.264		0.000	0.004	−0.86	238.20			−0.64	238.25
197	306	0.242		0.020	−0.006		0.264		0.000	0.002	−1.27	243.17			−1.06	243.17
198	307	0.250		0.033	−0.004		0.274		−0.014	−0.003	−1.48	247.08			−1.23	247.07
199	308	0.250		0.033	−0.002		0.274		−0.013	−0.005	−1.96	252.15			−1.71	252.09
200	309	0.250		0.040	0.000		0.275		−0.021	−0.009	−2.11	256.28			−1.82	256.22
201	310	0.258		0.040	0.003		0.284		−0.019	−0.013	−2.65	261.45			−2.34	261.37
202	311	0.250		0.040	0.007		0.275		−0.021	−0.016	−2.61	265.95			−2.28	265.85
203	312	0.250		0.047	0.005		0.276		−0.029	−0.016	−2.82	271.61			−2.48	271.49
204	313	0.250		0.053	0.003		0.276		−0.037	−0.016	−2.75	276.30			−2.37	276.17
205	314	0.250		0.060	0.000		0.277		−0.045	−0.015	−2.96	282.13			−2.55	282.00
206	315	0.250		0.067	−0.003		0.277		−0.054	−0.014	−2.83	287.05			−2.36	286.93
207	316	0.250		0.073	−0.004		0.278		−0.061	−0.015	−3.10	292.97			−2.60	292.86
208	317	0.250		0.080	−0.006		0.278		−0.070	−0.015	−3.04	297.97			−2.45	297.90
209	318	0.250		0.080	−0.005		0.278		−0.070	−0.016	−3.45	303.91			−2.86	303.81
210	319	0.250		0.080	−0.003		0.278		−0.069	−0.018	−3.48	308.97			−2.86	308.88
211	320	0.250		0.087	−0.002		0.279		−0.078	−0.021	−3.92	315.03			−3.23	314.98
212	321	0.250		0.087	0.000		0.279		−0.077	−0.023	−3.93	320.27			−3.21	320.23
213	322	0.250		0.093	0.001		0.280		−0.084	−0.025	−4.27	326.59			−3.46	326.60
214	323	0.250		0.093	0.001		0.280		−0.084	−0.025	−4.07	332.19			−3.24	332.20
215	324	0.250		0.093	−0.001		0.280		−0.084	−0.023	−4.24	338.82			−3.42	338.80
216	325	0.242		0.087	0.002		0.270		−0.079	−0.024	−4.14	344.47			−3.36	344.39
217	326	0.233		0.080	0.007		0.260		−0.072	−0.026	−4.51	351.04			−3.79	350.89
218	327	0.225		0.080	0.007		0.251		−0.073	−0.026	−4.46	356.80			−3.71	356.64
219	328	0.117		0.040	−0.004		0.127		−0.042	−0.001	−2.43	365.92			−2.24	365.18
220	329	0.108		0.047	−0.008		0.117		−0.052	0.002	−2.35	371.83			−2.12	371.13
221	330	0.100		0.047	−0.011		0.108		−0.052	0.006	−2.59	378.82			−2.35	378.11
222	331	0.100		0.047	−0.015		0.108		−0.053	0.010	−2.78	384.62			−2.51	383.91
223	332	0.100		0.047	−0.014		0.108		−0.053	0.009	−3.28	391.48			−3.01	390.76
224	333	0.100		0.040	−0.012		0.108		−0.044	0.008	−3.47	397.42			−3.26	396.63
225	334	0.050		0.020	−0.004		0.053		−0.023	0.003	−3.95	404.44			−3.90	403.48
226	335	0.008		0.000	0.000		0.008		0.000	0.000	−4.73	409.92			−4.74	408.89
227	336	0.008		0.000	0.000		0.008		0.000	0.000	−5.79	416.50			−5.80	415.46
228	337	0.000		0.000	0.001		0.000		0.000	−0.001	−6.58	422.11			−6.59	421.06

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 109$ (Mt)																
229	338	−0.008		0.000	0.001		−0.008		0.000	−0.001	−6.85	429.60			−6.86	428.55
230	339	−0.008		0.000	0.001		−0.008		0.000	−0.001	−6.70	436.29			−6.70	435.23
$Z = 110$																
146	256	0.208		0.020	0.015		0.227		−0.004	−0.018	−1.84	137.92			−1.90	142.61
147	257	0.208		0.020	0.018		0.227		−0.004	−0.021	−2.27	137.46			−2.33	141.99
148	258	0.208		0.027	0.017		0.227		−0.012	−0.022	−2.64	135.36			−2.69	139.77
149	259	0.217		0.033	0.016		0.238		−0.018	−0.023	−3.15	135.08			−3.21	139.34
150	260	0.208		0.033	0.019		0.228		−0.019	−0.025	−3.48	133.30			−3.52	137.45
151	261	0.208		0.033	0.023		0.228		−0.019	−0.029	−3.94	133.34			−3.97	137.35
152	262	0.208		0.040	0.021		0.228		−0.027	−0.029	−4.12	131.99			−4.13	135.89
153	263	0.208		0.040	0.020		0.228		−0.028	−0.028	−4.29	132.57			−4.31	136.33
154	264	0.208		0.047	0.013		0.229		−0.037	−0.023	−4.35	131.59			−4.37	135.24
155	265	0.208		0.053	0.008		0.229		−0.044	−0.019	−4.59	132.37			−4.61	135.88
156	266	0.200		0.060	0.004		0.220		−0.055	−0.017	−4.53	131.78			−4.53	135.18
157	267	0.200		0.060	0.002		0.220		−0.055	−0.015	−4.93	132.64			−4.93	135.92
158	268	0.200		0.067	−0.003		0.221		−0.064	−0.011	−5.07	132.10			−5.06	135.27
159	269	0.200		0.073	−0.007		0.221		−0.071	−0.009	−5.60	133.08			−5.57	136.14
160	270	0.200		0.080	−0.009		0.221		−0.080	−0.008	−5.85	132.68			−5.80	135.66
161	271	0.200		0.080	−0.011		0.221		−0.080	−0.006	−6.34	133.94			−6.29	136.80
162	272	0.200		0.087	−0.012		0.222		−0.088	−0.007	−6.55	133.82			−6.47	136.60
163	273	0.200		0.087	−0.017		0.222		−0.089	−0.002	−6.79	135.57			−6.70	138.24
164	274	0.200		0.093	−0.022		0.222		−0.097	0.002	−6.40	136.29			−6.28	138.90
165	275	0.200		0.093	−0.028		0.221		−0.098	0.007	−6.15	138.76			−6.02	141.27
166	276	0.192		0.087	−0.026		0.212		−0.091	0.007	−5.61	139.87			−5.47	142.29
167	277	0.158		0.067	−0.011		0.173		−0.071	−0.001	−5.21	142.71			−5.13	144.96
168	278	0.142		0.053	−0.004		0.155		−0.055	−0.004	−4.74	143.98			−4.68	146.11
169	279	0.117		0.033	0.005		0.127		−0.033	−0.009	−4.91	146.47			−4.89	148.47
170	280	0.100		0.027	0.005		0.108		−0.028	−0.008	−4.76	147.65			−4.74	149.56
171	281	0.100		0.027	0.003		0.108		−0.028	−0.006	−5.20	150.09			−5.18	151.90
172	282	0.100		0.033	−0.005		0.108		−0.036	0.001	−5.22	151.32			−5.19	153.05
173	283	0.092		0.040	−0.009		0.099		−0.045	0.005	−5.65	153.99			−5.60	155.64
174	284	0.092		0.040	−0.015		0.099		−0.045	0.011	−5.65	155.46			−5.59	157.04
175	285	0.092		0.047	−0.021		0.099		−0.054	0.016	−6.01	158.40			−5.91	159.93
176	286	0.092		0.053	−0.026		0.099		−0.061	0.020	−5.73	160.37			−5.60	161.85
177	287	−0.075		0.013	−0.002		−0.079		−0.013	0.003	−5.74	163.87			−5.73	165.14
178	288	−0.042		0.000	−0.007		−0.044		0.001	0.007	−5.83	165.68			−5.82	166.86
179	289	−0.017		0.000	−0.001		−0.018		0.000	0.001	−6.16	169.05			−6.16	170.14
180	290	0.000		0.000	0.000		0.000		0.000	0.000	−5.83	171.49			−5.83	172.50
181	291	0.000		0.000	−0.001		0.000		0.000	0.001	−6.01	175.21			−6.01	176.15
182	292	0.000		0.000	−0.001		0.000		0.000	0.001	−5.54	177.99			−5.55	178.85
183	293	0.000		0.000	−0.001		0.000		0.000	0.001	−5.52	182.11			−5.53	182.90
184	294	0.000		0.000	−0.001		0.000		0.000	0.001	−4.88	185.26			−4.89	185.98
185	295	0.000	0.034	0.000	0.000	−0.002	0.001	−0.046	0.000	0.001	−3.89	190.54			−3.88	191.21
186	296	0.000		0.000	−0.001		0.000		0.000	0.001	−3.29	193.85			−3.29	194.43
187	297	0.000	0.055	0.000	0.000	−0.001	0.001	−0.074	0.001	0.002	−2.44	199.17			−2.39	199.74
188	298	0.000		0.000	−0.001		0.000		0.000	0.001	−1.44	203.07			−1.44	203.52
189	299	0.000	0.075	0.000	0.000	0.000	0.003	−0.101	0.002	0.004	−1.14	208.04			−1.03	208.53
190	300	0.000		0.000	−0.001		0.000		0.000	0.001	0.23	212.49			0.22	212.81
191	301	0.000	0.090	0.000	0.000	0.000	0.004	−0.121	0.003	0.005	−0.13	216.97			0.03	217.40
192	302	0.000	0.093	0.000	0.000	−0.001	0.004	−0.125	0.004	0.006	0.41	220.78			0.58	221.17
193	303	0.242		0.000	−0.014		0.264		0.024	0.017	−0.11	225.28			0.13	225.68
194	304	0.242		0.000	−0.012		0.264		0.024	0.015	−0.11	228.73			0.13	229.07
195	305	0.250		0.007	−0.010		0.273		0.018	0.011	−0.46	233.58			−0.23	233.86
196	306	0.250		0.013	−0.008		0.273		0.010	0.007	−0.54	237.13			−0.30	237.36
197	307	0.250		0.020	−0.008		0.273		0.002	0.005	−0.97	242.07			−0.74	242.24
198	308	0.250		0.027	−0.005		0.274		−0.006	−0.001	−1.13	245.72			−0.88	245.86
199	309	0.258		0.033	−0.004		0.283		−0.012	−0.004	−1.64	250.75			−1.38	250.85

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 110$																
200	310	0.258		0.040	−0.001		0.284		−0.020	−0.009	−1.83	254.55			−1.52	254.64
201	311	0.258		0.040	0.001		0.284		−0.020	−0.011	−2.27	259.81			−1.97	259.85
202	312	0.250		0.040	0.006		0.275		−0.021	−0.015	−2.23	264.00			−1.90	264.02
203	313	0.250		0.040	0.006		0.275		−0.021	−0.015	−2.45	269.65			−2.12	269.63
204	314	0.250		0.047	0.003		0.276		−0.029	−0.014	−2.36	274.05			−2.00	274.02
205	315	0.250		0.053	0.001		0.276		−0.037	−0.014	−2.55	279.89			−2.18	279.84
206	316	0.250		0.060	−0.002		0.277		−0.046	−0.013	−2.40	284.52			−1.98	284.48
207	317	0.250		0.073	−0.007		0.278		−0.062	−0.012	−2.65	290.46			−2.16	290.45
208	318	0.250		0.073	−0.007		0.278		−0.062	−0.012	−2.62	295.14			−2.10	295.12
209	319	0.250		0.080	−0.008		0.278		−0.070	−0.013	−2.99	301.11			−2.42	301.10
210	320	0.250		0.080	−0.006		0.278		−0.070	−0.015	−3.01	305.89			−2.41	305.88
211	321	0.250		0.087	−0.005		0.279		−0.078	−0.018	−3.44	311.95			−2.77	311.98
212	322	0.250		0.093	−0.004		0.280		−0.085	−0.021	−3.42	316.93			−2.66	317.02
213	323	0.250		0.093	−0.002		0.280		−0.085	−0.023	−3.75	323.24			−2.98	323.31
214	324	0.250		0.093	−0.003		0.280		−0.085	−0.022	−3.56	328.55			−2.76	328.61
215	325	0.250		0.093	−0.006		0.280		−0.085	−0.019	−3.72	335.18			−2.93	335.21
216	326	0.233		0.087	0.001		0.260		−0.081	−0.022	−3.69	340.47			−2.94	340.44
217	327	0.233		0.080	0.003		0.259		−0.072	−0.023	−3.96	347.14			−3.28	347.01
218	328	0.117		0.040	−0.005		0.127		−0.042	0.000	−2.22	354.30			−2.03	353.65
219	329	0.108		0.040	−0.008		0.117		−0.043	0.003	−2.42	361.18			−2.23	360.50
220	330	0.100		0.047	−0.010		0.108		−0.052	0.005	−2.43	366.73			−2.19	366.08
221	331	0.100		0.053	−0.014		0.108		−0.060	0.008	−2.98	373.40			−2.68	372.80
222	332	0.100		0.053	−0.018		0.108		−0.060	0.012	−3.17	378.91			−2.83	378.33
223	333	0.100		0.053	−0.017		0.108		−0.060	0.011	−3.65	385.79			−3.32	385.17
224	334	0.092		0.047	−0.014		0.099		−0.053	0.009	−3.68	391.61			−3.41	390.91
225	335	0.050		0.020	−0.005		0.053		−0.023	0.004	−4.50	398.29			−4.44	397.36
226	336	0.008		0.000	0.000		0.008		0.000	0.000	−5.37	403.39			−5.38	402.40
227	337	0.008		0.000	0.000		0.008		0.000	0.000	−6.44	409.96			−6.44	408.95
228	338	0.000		0.000	0.001		0.000		0.000	−0.001	−7.24	415.28			−7.25	414.25
229	339	−0.008		0.000	0.001		−0.008		0.000	−0.001	−7.50	422.79			−7.50	421.75
$Z = 111$																
148	259	0.200		0.027	0.014		0.218		−0.014	−0.019	−2.52	144.95			−2.58	149.75
149	260	0.208		0.033	0.014		0.227		−0.020	−0.020	−2.95	144.39			−3.03	149.04
150	261	0.208		0.033	0.017		0.228		−0.020	−0.023	−3.32	142.55			−3.37	147.07
151	262	0.208		0.033	0.021		0.228		−0.019	−0.027	−3.78	142.23			−3.83	146.61
152	263	0.208		0.040	0.019		0.228		−0.028	−0.027	−3.93	140.87			−3.97	145.13
153	264	0.200		0.040	0.018		0.219		−0.029	−0.026	−4.09	141.11			−4.13	145.24
154	265	0.200		0.047	0.011		0.220		−0.038	−0.021	−4.15	140.11			−4.18	144.11
155	266	0.200		0.047	0.008		0.219		−0.039	−0.018	−4.41	140.51			−4.45	144.37
156	267	0.200		0.053	0.003		0.220		−0.046	−0.014	−4.44	139.80			−4.47	143.54
157	268	0.200		0.060	0.000		0.220		−0.055	−0.013	−4.82	140.34			−4.84	143.96
158	269	0.200		0.067	−0.005		0.220		−0.064	−0.009	−4.96	139.77			−4.97	143.28
159	270	0.200		0.073	−0.008		0.221		−0.071	−0.008	−5.48	140.42			−5.48	143.81
160	271	0.200		0.080	−0.011		0.221		−0.080	−0.006	−5.71	140.02			−5.68	143.31
161	272	0.200		0.080	−0.013		0.221		−0.080	−0.004	−6.20	140.93			−6.17	144.10
162	273	0.200		0.093	−0.018		0.222		−0.096	−0.002	−6.41	140.79			−6.35	143.89
163	274	0.200		0.093	−0.023		0.222		−0.097	0.003	−6.70	142.14			−6.63	145.13
164	275	0.200		0.093	−0.027		0.221		−0.097	0.006	−6.38	142.77			−6.28	145.68
165	276	0.192		0.093	−0.030		0.212		−0.099	0.010	−6.19	144.84			−6.08	147.64
166	277	0.175		0.080	−0.019		0.193		−0.085	0.004	−5.69	145.89			−5.60	148.56
167	278	0.150		0.060	−0.006		0.164		−0.063	−0.004	−5.36	148.32			−5.32	150.85
168	279	0.150		0.060	−0.008		0.164		−0.063	−0.002	−5.12	149.34			−5.06	151.78
169	280	0.108		0.027	0.007		0.117		−0.027	−0.010	−5.45	151.34			−5.43	153.63
170	281	0.092		0.020	0.009		0.099		−0.020	−0.011	−5.43	152.36			−5.42	154.55
171	282	0.092		0.020	0.005		0.099		−0.020	−0.007	−5.88	154.46			−5.87	156.55
172	283	0.092		0.033	−0.004		0.099		−0.036	0.001	−5.94	155.64			−5.91	157.64
173	284	0.092		0.040	−0.008		0.099		−0.045	0.004	−6.34	158.00			−6.30	159.92

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 111$																
174	285	0.083		0.040	−0.013		0.089		−0.045	0.009	−6.35	159.44			−6.30	161.28
175	286	0.083		0.047	−0.019		0.089		−0.054	0.015	−6.71	162.05			−6.64	163.83
176	287	0.075		0.047	−0.022		0.081		−0.055	0.018	−6.49	163.94			−6.40	165.64
177	288	−0.075		0.013	−0.003		−0.079		−0.013	0.004	−6.56	167.06			−6.55	168.58
178	289	−0.033		0.000	−0.006		−0.035		0.001	0.006	−6.71	168.78			−6.71	170.21
179	290	−0.017		0.000	−0.002		−0.018		0.000	0.002	−7.01	171.87			−7.01	173.22
180	291	0.000		0.000	0.000		0.000		0.000	0.000	−6.66	174.30			−6.67	175.56
181	292	0.000		0.000	0.000		0.000		0.000	0.000	−6.82	177.73			−6.82	178.91
182	293	0.000		0.000	0.000		0.000		0.000	0.000	−6.35	180.49			−6.36	181.59
183	294	0.000		0.000	0.000		0.000		0.000	0.000	−6.29	184.34			−6.29	185.36
184	295	0.000		0.000	0.000		0.000		0.000	0.000	−5.65	187.46			−5.65	188.41
185	296	0.000	0.030	0.000	0.000	−0.001	0.000	−0.040	0.000	0.001	−4.70	192.39			−4.69	193.27
186	297	0.000		0.000	0.000		0.000		0.000	0.000	−4.07	195.71			−4.07	196.51
187	298	0.000		0.000	−0.001		0.000		0.000	0.001	−2.94	201.00			−2.95	201.73
188	299	0.000	0.042	0.000	0.000	0.000	0.001	−0.056	0.001	0.001	−2.30	204.52			−2.27	205.21
189	300	0.000		0.000	0.000		0.000		0.000	0.000	−1.22	209.95			−1.22	210.54
190	301	0.000	0.065	0.000	0.000	0.000	0.002	−0.087	0.002	0.003	−0.94	213.30			−0.86	213.91
191	302	0.000	0.077	0.000	0.000	0.000	0.003	−0.104	0.002	0.004	−0.53	218.24			−0.43	218.81
192	303	0.000	0.079	0.000	0.000	0.000	0.003	−0.106	0.003	0.004	0.05	222.08			0.17	222.60
193	304	0.000	0.090	0.000	0.000	0.000	0.004	−0.121	0.003	0.005	0.32	227.07			0.48	227.56
194	305	0.250		0.007	−0.016		0.273		0.017	0.017	−0.21	229.97			0.03	230.49
195	306	0.250		0.007	−0.014		0.273		0.017	0.015	−0.52	234.55			−0.29	235.01
196	307	0.250		0.013	−0.013		0.273		0.010	0.012	−0.60	238.09			−0.37	238.48
197	308	0.258		0.020	−0.010		0.282		0.003	0.007	−1.03	242.72			−0.80	243.06
198	309	0.258		0.027	−0.009		0.283		−0.005	0.003	−1.18	246.37			−0.93	246.67
199	310	0.258		0.033	−0.008		0.283		−0.012	0.000	−1.63	251.16			−1.38	251.40
200	311	0.258		0.033	−0.004		0.283		−0.012	−0.004	−1.81	254.95			−1.55	255.15
201	312	0.258		0.040	−0.003		0.284		−0.020	−0.007	−2.21	259.95			−1.94	260.12
202	313	0.250		0.040	0.002		0.275		−0.021	−0.011	−2.14	264.15			−1.86	264.29
203	314	0.250		0.040	0.002		0.275		−0.021	−0.011	−2.35	269.52			−2.07	269.60
204	315	0.250		0.040	0.001		0.275		−0.021	−0.010	−2.26	273.91			−1.96	273.97
205	316	0.250		0.047	−0.002		0.275		−0.030	−0.010	−2.45	279.46			−2.13	279.48
206	317	0.250		0.060	−0.007		0.276		−0.046	−0.009	−2.26	284.12			−1.87	284.17
207	318	0.250		0.067	−0.010		0.277		−0.055	−0.008	−2.50	289.77			−2.08	289.81
208	319	0.250		0.073	−0.011		0.277		−0.062	−0.008	−2.41	294.50			−1.92	294.56
209	320	0.250		0.080	−0.010		0.278		−0.071	−0.011	−2.72	300.23			−2.19	300.30
210	321	0.250		0.080	−0.009		0.278		−0.070	−0.012	−2.74	305.01			−2.18	305.07
211	322	0.250		0.087	−0.005		0.279		−0.078	−0.018	−3.12	310.83			−2.49	310.93
212	323	0.258		0.093	−0.005		0.289		−0.083	−0.020	−3.13	315.77			−2.40	315.93
213	324	0.250		0.093	−0.001		0.280		−0.084	−0.023	−3.40	321.85			−2.67	321.98
214	325	0.183		0.040	0.010		0.200		−0.033	−0.017	−3.05	327.30			−2.76	326.96
215	326	0.167		0.033	0.016		0.182		−0.027	−0.021	−3.35	333.51			−3.07	333.12
216	327	0.158		0.027	0.017		0.172		−0.021	−0.021	−3.36	338.76			−3.10	338.32
217	328	0.142		0.027	0.004		0.154		−0.024	−0.008	−3.35	345.42			−3.20	344.85
218	329	0.125		0.033	−0.003		0.135		−0.033	−0.001	−2.99	351.19			−2.84	350.58
219	330	0.117		0.040	−0.006		0.127		−0.043	0.001	−3.17	357.80			−3.00	357.19
220	331	0.108		0.040	−0.010		0.117		−0.044	0.005	−3.19	363.33			−3.00	362.71
221	332	0.100		0.047	−0.014		0.108		−0.053	0.009	−3.57	369.90			−3.33	369.30
222	333	0.100		0.047	−0.017		0.108		−0.053	0.012	−3.77	375.39			−3.50	374.80
223	334	0.092		0.040	−0.015		0.099		−0.045	0.011	−4.13	382.11			−3.92	381.44
224	335	0.050		0.027	−0.007		0.053		−0.031	0.005	−4.47	387.61			−4.39	386.79
225	336	0.050		0.027	−0.008		0.053		−0.031	0.006	−5.21	394.09			−5.13	393.25
226	337	0.008		0.000	0.001		0.008		0.000	−0.001	−6.26	399.02			−6.26	398.07
227	338	0.008		0.000	0.000		0.008		0.000	0.000	−7.34	405.30			−7.34	404.33
228	339	0.000		0.000	0.001		0.000		0.000	−0.001	−8.16	410.60			−8.16	409.61
$Z = 112$																
150	262	0.200		0.027	0.018		0.218		−0.014	−0.023	−2.80	150.53			−2.85	155.46

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 112$																
151	263	0.208		0.033	0.020		0.228		−0.019	−0.026	−3.21	150.23			−3.26	155.02
152	264	0.208		0.040	0.018		0.228		−0.028	−0.026	−3.33	148.55			−3.37	153.21
153	265	0.200		0.040	0.018		0.219		−0.029	−0.026	−3.53	148.72			−3.57	153.24
154	266	0.200		0.047	0.010		0.219		−0.038	−0.020	−3.58	147.39			−3.61	151.77
155	267	0.200		0.047	0.007		0.219		−0.039	−0.017	−3.84	147.76			−3.88	152.00
156	268	0.200		0.053	0.002		0.220		−0.047	−0.013	−3.87	146.70			−3.90	150.82
157	269	0.200		0.060	−0.002		0.220		−0.055	−0.011	−4.23	147.22			−4.26	151.21
158	270	0.200		0.067	−0.007		0.220		−0.064	−0.007	−4.39	146.30			−4.40	150.17
159	271	0.200		0.073	−0.011		0.221		−0.072	−0.005	−4.91	146.90			−4.92	150.65
160	272	0.200		0.080	−0.014		0.221		−0.080	−0.003	−5.17	146.13			−5.15	149.79
161	273	0.200		0.080	−0.015		0.221		−0.081	−0.002	−5.67	147.01			−5.65	150.54
162	274	0.200		0.087	−0.017		0.222		−0.089	−0.002	−5.91	146.50			−5.86	149.93
163	275	0.200		0.093	−0.023		0.222		−0.097	0.003	−6.17	147.86			−6.11	151.18
164	276	0.192		0.093	−0.026		0.212		−0.098	0.006	−5.92	148.09			−5.82	151.33
165	277	0.183		0.087	−0.027		0.202		−0.093	0.009	−5.77	150.08			−5.69	153.19
166	278	0.150		0.060	−0.006		0.164		−0.063	−0.004	−5.06	151.01			−5.01	153.97
167	279	0.150		0.060	−0.006		0.164		−0.063	−0.004	−5.14	153.00			−5.10	155.85
168	280	0.075		0.007	0.005		0.080		−0.006	−0.006	−5.17	153.42			−5.17	156.11
169	281	0.083		0.013	0.008		0.089		−0.012	−0.009	−5.62	155.27			−5.61	157.87
170	282	0.083		0.013	0.011		0.089		−0.012	−0.012	−5.75	155.82			−5.73	158.32
171	283	0.083		0.013	0.007		0.089		−0.012	−0.008	−6.19	157.91			−6.18	160.29
172	284	0.083		0.027	−0.001		0.089		−0.029	−0.001	−6.23	158.77			−6.21	161.06
173	285	0.083		0.033	−0.006		0.089		−0.037	0.003	−6.63	161.11			−6.60	163.31
174	286	0.075		0.040	−0.012		0.081		−0.046	0.009	−6.64	162.23			−6.59	164.35
175	287	0.075		0.040	−0.018		0.081		−0.046	0.015	−6.99	164.82			−6.93	166.86
176	288	−0.058		0.000	−0.003		−0.061		0.001	0.003	−6.93	166.23			−6.92	168.12
177	289	−0.058		0.007	−0.002		−0.061		−0.007	0.002	−7.29	169.03			−7.28	170.83
178	290	−0.025		0.000	−0.003		−0.026		0.000	0.003	−7.44	170.44			−7.44	172.14
179	291	−0.008		0.000	0.000		−0.008		0.000	0.000	−7.71	173.53			−7.71	175.14
180	292	0.000		0.000	−0.001		0.000		0.000	0.001	−7.39	175.61			−7.39	177.13
181	293	0.000		0.000	−0.001		0.000		0.000	0.001	−7.58	178.99			−7.58	180.43
182	294	0.000		0.000	−0.001		0.000		0.000	0.001	−7.10	181.44			−7.10	182.80
183	295	0.000		0.000	−0.001		0.000		0.000	0.001	−7.02	185.29			−7.02	186.56
184	296	0.000		0.000	−0.001		0.000		0.000	0.001	−6.37	188.11			−6.37	189.30
185	297	0.000	0.015	0.000	0.000	−0.002	0.000	−0.020	0.000	0.000	−5.48	192.96			−5.48	194.07
186	298	0.000		0.000	−0.001		0.000		0.000	0.001	−4.78	196.03			−4.78	197.06
187	299	0.000	0.024	0.000	0.000	−0.001	0.000	−0.032	0.000	0.000	−3.69	201.26			−3.69	202.23
188	300	0.000		0.000	−0.001		0.000		0.000	0.001	−2.93	204.60			−2.93	205.48
189	301	0.000	0.041	0.000	0.000	0.000	0.001	−0.055	0.001	0.001	−2.02	209.84			−2.00	210.68
190	302	0.000	0.031	0.000	0.000	−0.001	0.000	−0.042	0.000	0.001	−1.25	213.37			−1.23	214.12
191	303	0.000	0.062	0.000	0.000	0.000	0.002	−0.083	0.002	0.002	−0.64	218.49			−0.58	219.23
192	304	0.000	0.062	0.000	0.000	−0.001	0.002	−0.083	0.002	0.002	−0.01	222.07			0.06	222.75
193	305	0.000	0.080	0.000	0.000	−0.001	0.003	−0.108	0.003	0.004	0.41	227.19			0.52	227.84
194	306	0.000		0.000	0.000		0.000		0.000	0.000	1.47	231.38			1.46	231.85
195	307	0.350		0.080	−0.019		0.394		−0.046	−0.009	−0.26	234.53			0.20	235.40
196	308	0.267		0.013	−0.007		0.292		0.014	0.006	−0.37	237.73			−0.12	238.32
197	309	0.267		0.020	−0.007		0.293		0.006	0.004	−0.76	242.40			−0.52	242.92
198	310	0.275		0.033	−0.006		0.303		−0.008	−0.002	−0.86	245.79			−0.58	246.29
199	311	0.275		0.033	−0.004		0.303		−0.008	−0.004	−1.35	250.52			−1.08	250.96
200	312	0.267		0.033	−0.002		0.294		−0.009	−0.006	−1.52	254.02			−1.24	254.41
201	313	0.267		0.033	−0.001		0.294		−0.009	−0.006	−1.94	258.98			−1.66	259.32
202	314	0.258		0.033	0.004		0.284		−0.011	−0.011	−1.93	262.83			−1.64	263.13
203	315	0.258		0.033	0.004		0.284		−0.011	−0.011	−2.10	268.23			−1.81	268.47
204	316	0.250		0.040	0.001		0.275		−0.021	−0.010	−1.83	272.50			−1.53	272.71
205	317	0.250		0.047	−0.002		0.275		−0.030	−0.010	−2.00	278.05			−1.68	278.23
206	318	0.250		0.053	−0.004		0.276		−0.038	−0.009	−1.82	282.41			−1.46	282.57
207	319	0.250		0.060	−0.007		0.276		−0.046	−0.009	−2.06	288.05			−1.68	288.19

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 112$																
208	320	0.250		0.067	−0.009		0.277		−0.055	−0.009	−1.96	292.49			−1.52	292.65
209	321	0.250		0.073	−0.009		0.277		−0.062	−0.010	−2.30	298.19			−1.82	298.34
210	322	0.250		0.073	−0.007		0.278		−0.062	−0.012	−2.28	302.71			−1.77	302.85
211	323	0.258		0.087	−0.008		0.288		−0.077	−0.016	−2.73	308.45			−2.10	308.67
212	324	0.183		0.040	0.008		0.200		−0.033	−0.015	−2.11	313.74			−1.84	313.55
213	325	0.175		0.033	0.010		0.191		−0.026	−0.016	−2.49	319.70			−2.26	319.44
214	326	0.167		0.033	0.011		0.182		−0.027	−0.017	−2.62	324.39			−2.38	324.10
215	327	0.158		0.027	0.013		0.172		−0.021	−0.017	−2.97	330.53			−2.75	330.19
216	328	0.150		0.027	0.011		0.163		−0.022	−0.015	−2.95	335.52			−2.75	335.12
217	329	0.142		0.027	0.007		0.154		−0.024	−0.011	−3.24	341.87			−3.08	341.40
218	330	0.133		0.033	0.001		0.144		−0.032	−0.006	−3.13	347.10			−2.97	346.60
219	331	0.117		0.040	−0.004		0.127		−0.042	−0.001	−3.23	353.80			−3.05	353.28
220	332	0.108		0.040	−0.009		0.117		−0.043	0.004	−3.33	358.97			−3.14	358.42
221	333	0.100		0.040	−0.013		0.108		−0.044	0.009	−3.72	365.51			−3.53	364.95
222	334	0.100		0.040	−0.016		0.108		−0.044	0.011	−3.94	370.70			−3.72	370.14
223	335	0.067		0.040	−0.012		0.072		−0.046	0.009	−4.38	377.34			−4.20	376.70
224	336	0.050		0.020	−0.004		0.053		−0.023	0.003	−4.96	382.32			−4.91	381.53
225	337	0.042		0.020	−0.004		0.045		−0.023	0.003	−5.80	388.68			−5.76	387.87
226	338	0.008		0.000	0.001		0.008		0.000	−0.001	−6.92	393.27			−6.92	392.39
227	339	0.008		0.000	0.000		0.008		0.000	0.000	−8.00	399.54			−8.01	398.63
$Z = 113$																
153	266	0.200		0.040	0.012		0.219		−0.030	−0.020	−3.10	158.26			−3.16	163.16
154	267	0.192		0.047	0.006		0.210		−0.040	−0.015	−3.21	156.83			−3.26	161.60
155	268	0.192		0.047	0.004		0.210		−0.041	−0.013	−3.52	156.80			−3.57	161.43
156	269	0.192		0.053	−0.002		0.211		−0.048	−0.009	−3.60	155.67			−3.65	160.16
157	270	0.192		0.060	−0.005		0.211		−0.057	−0.007	−3.98	155.83			−4.02	160.19
158	271	0.192		0.067	−0.010		0.211		−0.066	−0.004	−4.17	154.84			−4.20	159.08
159	272	0.192		0.073	−0.013		0.212		−0.073	−0.002	−4.70	155.11			−4.72	159.22
160	273	0.192		0.080	−0.015		0.212		−0.082	−0.002	−4.96	154.30			−4.96	158.30
161	274	0.192		0.080	−0.017		0.212		−0.082	0.000	−5.48	154.82			−5.48	158.69
162	275	0.200		0.093	−0.022		0.222		−0.097	0.002	−5.66	154.34			−5.63	158.12
163	276	0.192		0.093	−0.024		0.213		−0.098	0.004	−6.03	155.25			−5.99	158.91
164	277	0.183		0.087	−0.024		0.202		−0.092	0.006	−5.86	155.37			−5.81	158.92
165	278	0.167		0.080	−0.020		0.184		−0.086	0.005	−5.62	157.12			−5.58	160.54
166	279	0.150		0.067	−0.011		0.164		−0.072	0.000	−5.11	157.82			−5.07	161.13
167	280	0.058		−0.007	0.001		0.062		0.010	0.000	−5.95	158.73			−5.95	161.87
168	281	0.058		0.000	0.004		0.062		0.001	−0.004	−6.09	159.01			−6.09	162.03
169	282	0.067		0.000	0.008		0.071		0.002	−0.008	−6.54	160.52			−6.54	163.44
170	283	0.067		0.007	0.009		0.072		−0.006	−0.009	−6.61	161.12			−6.60	163.93
171	284	0.075		0.013	0.008		0.080		−0.013	−0.009	−7.00	162.91			−7.00	165.62
172	285	0.067		0.020	0.001		0.072		−0.022	−0.002	−7.04	163.76			−7.03	166.35
173	286	0.067		0.027	−0.004		0.072		−0.030	0.002	−7.43	165.79			−7.41	168.28
174	287	0.058		0.027	−0.009		0.062		−0.031	0.007	−7.43	166.89			−7.41	169.29
175	288	0.058		0.033	−0.013		0.062		−0.038	0.011	−7.76	169.18			−7.73	171.49
176	289	−0.050		0.000	−0.001		−0.053		0.001	0.001	−7.94	170.32			−7.94	172.51
177	290	−0.058		0.007	−0.001		−0.061		−0.007	0.001	−8.19	172.92			−8.19	175.00
178	291	−0.025		0.000	−0.002		−0.026		0.000	0.002	−8.37	174.27			−8.37	176.25
179	292	−0.017		0.000	−0.001		−0.018		0.000	0.001	−8.61	177.07			−8.61	178.96
180	293	0.000		0.000	−0.001		0.000		0.000	0.001	−8.22	179.20			−8.23	181.00
181	294	0.000		0.000	−0.001		0.000		0.000	0.001	−8.35	182.33			−8.35	184.03
182	295	0.000		0.000	−0.001		0.000		0.000	0.001	−7.82	184.81			−7.82	186.43
183	296	0.000		0.000	−0.001		0.000		0.000	0.001	−7.72	188.35			−7.72	189.88
184	297	0.000		0.000	−0.001		0.000		0.000	0.001	−7.06	191.16			−7.07	192.61
185	298	0.000		0.000	−0.003		0.000		0.000	0.003	−5.99	195.88			−5.99	197.24
186	299	0.000		0.000	−0.001		0.000		0.000	0.001	−5.47	198.75			−5.48	200.03
187	300	0.000		0.000	−0.003		0.000		0.000	0.003	−4.34	203.72			−4.35	204.92
188	301	0.000		0.000	−0.001		0.000		0.000	0.001	−3.62	206.99			−3.62	208.11

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 113																
189	302	0.000	0.032	0.000	0.000	−0.001	0.000	−0.043	0.000	0.001	−2.71	211.92			−2.70	212.98
190	303	0.000	0.013	0.000	0.000	−0.002	0.000	−0.017	0.000	0.000	−1.93	215.44			−1.93	216.41
191	304	0.000	0.043	0.000	0.000	−0.002	0.001	−0.058	0.001	0.001	−1.26	220.33			−1.23	221.25
192	305	0.000	0.039	0.000	0.000	−0.002	0.001	−0.052	0.001	0.001	−0.60	223.92			−0.57	224.77
193	306	0.000		0.000	−0.004		0.000		0.000	0.004	0.30	229.20			0.29	229.96
194	307	0.000	0.054	0.000	0.000	−0.002	0.001	−0.072	0.001	0.002	0.43	232.45			0.48	233.19
195	308	0.350		0.073	−0.018		0.393		−0.037	−0.007	−0.58	236.01			−0.20	237.01
196	309	0.300		0.033	−0.004		0.331		−0.001	−0.004	−0.41	239.48			−0.14	240.30
197	310	0.292		0.033	−0.004		0.322		−0.003	−0.004	−0.78	243.87			−0.52	244.61
198	311	0.283		0.033	−0.007		0.312		−0.006	−0.001	−0.90	247.22			−0.63	247.91
199	312	0.283		0.033	−0.005		0.312		−0.006	−0.003	−1.36	251.68			−1.10	252.30
200	313	0.275		0.033	−0.004		0.303		−0.008	−0.004	−1.50	255.20			−1.23	255.77
201	314	0.275		0.033	−0.002		0.303		−0.007	−0.006	−1.88	259.91			−1.62	260.41
202	315	0.267		0.033	0.001		0.294		−0.009	−0.008	−1.96	263.66			−1.68	264.12
203	316	0.258		0.033	0.002		0.283		−0.011	−0.009	−2.03	268.85			−1.77	269.24
204	317	0.258		0.040	−0.002		0.284		−0.020	−0.008	−1.86	273.01			−1.58	273.37
205	318	0.250		0.040	−0.002		0.275		−0.022	−0.008	−1.86	278.44			−1.59	278.73
206	319	0.250		0.047	−0.005		0.275		−0.031	−0.007	−1.65	282.81			−1.35	283.08
207	320	0.250		0.053	−0.007		0.276		−0.038	−0.006	−1.88	288.17			−1.56	288.41
208	321	0.250		0.060	−0.009		0.276		−0.047	−0.007	−1.76	292.61			−1.39	292.86
209	322	0.250		0.067	−0.009		0.277		−0.055	−0.009	−2.07	298.06			−1.66	298.29
210	323	0.250		0.067	−0.007		0.277		−0.055	−0.011	−2.02	302.59			−1.59	302.80
211	324	0.258		0.080	−0.008		0.287		−0.068	−0.014	−2.50	308.02			−1.97	308.27
212	325	0.167		0.027	0.012		0.181		−0.020	−0.016	−1.91	313.26			−1.71	313.14
213	326	0.158		0.027	0.013		0.172		−0.021	−0.017	−2.27	318.96			−2.08	318.79
214	327	0.150		0.020	0.014		0.162		−0.014	−0.017	−2.51	323.52			−2.34	323.30
215	328	0.150		0.020	0.015		0.162		−0.014	−0.018	−2.96	329.29			−2.77	329.03
216	329	0.142		0.020	0.012		0.154		−0.015	−0.015	−3.03	334.18			−2.87	333.86
217	330	0.133		0.020	0.006		0.144		−0.016	−0.009	−3.22	340.34			−3.11	339.94
218	331	0.125		0.027	0.001		0.135		−0.026	−0.005	−3.24	345.44			−3.12	345.00
219	332	0.108		0.033	−0.003		0.117		−0.035	−0.001	−3.49	351.69			−3.37	351.22
220	333	0.100		0.040	−0.007		0.108		−0.044	0.003	−3.63	356.82			−3.47	356.35
221	334	0.100		0.040	−0.012		0.108		−0.044	0.008	−4.16	362.93			−3.99	362.45
222	335	0.075		0.040	−0.013		0.081		−0.046	0.010	−4.45	368.06			−4.28	367.54
223	336	0.050		0.027	−0.006		0.054		−0.031	0.004	−5.11	374.19			−5.04	373.54
224	337	0.042		0.013	−0.003		0.045		−0.015	0.002	−5.69	379.17			−5.66	378.44
225	338	0.033		0.013	0.000		0.035		−0.015	0.000	−6.59	385.19			−6.58	384.43
226	339	0.008		0.000	0.000		0.008		0.000	0.000	−7.68	389.80			−7.69	388.99
Z = 114																
155	269	0.192		0.040	0.006		0.210		−0.032	−0.014	−3.02	164.74			−3.08	169.79
156	270	0.183		0.047	0.002		0.200		−0.042	−0.011	−3.14	163.23			−3.18	168.14
157	271	0.183		0.053	−0.002		0.200		−0.050	−0.008	−3.50	163.38			−3.54	168.15
158	272	0.183		0.060	−0.007		0.201		−0.059	−0.005	−3.68	162.06			−3.70	166.70
159	273	0.183		0.067	−0.010		0.201		−0.067	−0.003	−4.16	162.34			−4.18	166.84
160	274	0.183		0.073	−0.012		0.201		−0.074	−0.003	−4.41	161.21			−4.41	165.60
161	275	0.192		0.080	−0.018		0.212		−0.082	0.001	−4.84	161.78			−4.85	166.03
162	276	0.192		0.087	−0.020		0.212		−0.091	0.002	−5.10	160.89			−5.07	165.04
163	277	0.183		0.087	−0.020		0.202		−0.092	0.003	−5.47	161.76			−5.45	165.79
164	278	0.175		0.087	−0.023		0.193		−0.093	0.006	−5.28	161.57			−5.23	165.49
165	279	−0.050		−0.007	0.000		−0.052		0.009	0.000	−6.01	162.33			−6.01	166.07
166	280	0.050		−0.013	−0.001		0.053		0.017	0.002	−6.07	162.12			−6.07	165.74
167	281	0.050		−0.013	0.001		0.053		0.017	0.000	−6.47	163.44			−6.47	166.94
168	282	0.050		−0.013	0.004		0.053		0.017	−0.003	−6.57	163.44			−6.57	166.82
169	283	0.050		−0.013	0.007		0.053		0.017	−0.006	−6.95	165.00			−6.95	168.26
170	284	0.058		−0.007	0.011		0.062		0.010	−0.010	−7.00	165.28			−6.99	168.43
171	285	−0.092		−0.020	−0.002		−0.096		0.027	0.000	−7.41	167.04			−7.40	170.07
172	286	−0.092		−0.027	−0.003		−0.096		0.035	0.000	−7.36	167.64			−7.34	170.57

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 114$																
173	287	−0.075		−0.027	−0.002		−0.078		0.034	0.000	−7.74	169.64			−7.73	172.47
174	288	0.050		0.020	−0.005		0.053		−0.023	0.004	−7.80	170.36			−7.80	173.07
175	289	−0.050		−0.013	−0.002		−0.052		0.016	0.001	−8.37	172.40			−8.37	175.00
176	290	−0.025		0.000	−0.002		−0.026		*0.000*	*0.002*	−8.61	173.15			−8.61	175.64
177	291	−0.033		−0.007	−0.002		−0.035		0.009	0.002	−8.89	175.69			−8.89	178.08
178	292	−0.017		0.000	−0.002		−0.018		0.000	0.002	−8.89	176.91			−8.89	179.19
179	293	−0.008		0.000	0.000		−0.008		0.000	0.000	−9.12	179.70			−9.12	181.89
180	294	0.000		0.000	−0.001		0.000		0.000	0.001	−8.76	181.48			−8.77	183.57
181	295	0.000		0.000	−0.001		0.000		0.000	0.001	−8.88	184.59			−8.89	186.58
182	296	0.000		0.000	−0.001		0.000		0.000	0.001	−8.39	186.72			−8.39	188.62
183	297	*0.000*		*0.000*	*−0.001*		*0.000*		*0.000*	*0.001*	−8.26	190.28			−8.26	192.09
184	298	0.000		0.000	−0.001		0.000		0.000	0.001	−7.59	192.78			−7.60	194.50
185	299	0.000		0.000	−0.002		0.000		0.000	0.002	−6.51	197.50			−6.51	199.12
186	300	0.000		0.000	−0.001		0.000		0.000	0.001	−5.99	200.05			−5.99	201.59
187	301	0.000		0.000	−0.001		0.000		0.000	0.001	−4.84	205.02			−4.84	206.48
188	302	0.000		0.000	−0.001		0.000		0.000	0.001	−4.13	207.96			−4.13	209.34
189	303	0.000	0.010	0.000	0.000	0.000	0.000	−0.013	0.000	0.000	−3.10	213.00			−3.11	214.29
190	304	0.000		0.000	−0.001		0.000		0.000	0.001	−2.43	216.10			−2.43	217.32
191	305	0.000		0.000	−0.001		0.000		0.000	0.001	−1.52	221.21			−1.52	222.34
192	306	0.000		0.000	−0.001		0.000		0.000	0.001	−0.95	224.40			−0.96	225.45
193	307	0.000		0.000	−0.002		0.000		0.000	0.002	−0.15	229.58			−0.15	230.56
194	308	0.000		0.000	−0.001		0.000		0.000	0.001	0.31	232.84			0.30	233.75
195	309	0.000		0.000	0.000		0.000		0.000	0.000	0.99	238.09			0.99	238.92
196	310	0.000		0.000	−0.001		0.000		0.000	0.001	1.33	241.42			1.33	242.18
197	311	0.300		0.033	−0.002		0.331		−0.001	−0.005	−0.71	244.12			−0.44	245.08
198	312	0.300		0.033	−0.002		0.331		−0.001	−0.005	−0.77	247.23			−0.47	248.15
199	313	0.292		0.033	−0.001		0.322		−0.003	−0.006	−1.16	251.75			−0.88	252.59
200	314	0.283		0.033	−0.002		0.312		−0.005	−0.006	−1.32	254.94			−1.04	255.72
201	315	0.275		0.033	−0.001		0.303		−0.007	−0.007	−1.69	259.65			−1.42	260.35
202	316	0.267		0.033	0.001		0.294		−0.009	−0.008	−1.72	263.15			−1.44	263.80
203	317	0.267		0.033	0.002		0.294		−0.009	−0.009	−1.87	268.25			−1.59	268.84
204	318	0.258		0.033	0.000		0.283		−0.011	−0.007	−1.58	272.23			−1.31	272.76
205	319	0.258		0.040	−0.003		0.284		−0.020	−0.007	−1.68	277.55			−1.40	278.03
206	320	0.250		0.040	−0.003		0.275		−0.022	−0.007	−1.29	281.80			−1.01	282.23
207	321	0.250		0.053	−0.008		0.276		−0.038	−0.005	−1.49	287.18			−1.17	287.59
208	322	0.250		0.060	−0.010		0.276		−0.047	−0.006	−1.34	291.37			−0.97	291.77
209	323	0.250		0.067	−0.010		0.277		−0.055	−0.008	−1.62	296.83			−1.21	297.21
210	324	0.250		0.067	−0.009		0.277		−0.055	−0.009	−1.57	301.08			−1.14	301.44
211	325	0.267		0.080	−0.010		0.298		−0.067	−0.013	−2.07	306.47			−1.53	306.89
212	326	0.167		0.020	0.012		0.181		−0.011	−0.015	−1.64	311.26			−1.46	311.27
213	327	0.158		0.020	0.013		0.171		−0.013	−0.016	−2.01	316.94			−1.84	316.89
214	328	0.150		0.013	0.015		0.162		−0.005	−0.017	−2.26	321.21			−2.09	321.11
215	329	0.142		0.013	0.016		0.153		−0.006	−0.018	−2.69	326.98			−2.53	326.83
216	330	0.133		0.013	0.011		0.143		−0.008	−0.013	−2.64	331.71			−2.51	331.48
217	331	0.125		0.020	0.006		0.135		−0.017	−0.009	−2.91	337.79			−2.80	337.50
218	332	0.108		0.027	0.002		0.116		−0.027	−0.005	−2.98	342.54			−2.88	342.21
219	333	0.100		0.033	−0.003		0.108		−0.035	−0.001	−3.26	348.76			−3.14	348.41
220	334	0.100		0.040	−0.007		0.108		−0.044	0.003	−3.53	353.48			−3.37	353.12
221	335	0.092		0.040	−0.011		0.099		−0.045	0.007	−4.03	359.62			−3.86	359.24
222	336	0.025		0.007	0.000		0.027		−0.008	0.000	−4.54	364.23			−4.54	363.65
223	337	0.042		0.020	−0.003		0.045		−0.023	0.002	−5.34	370.21			−5.31	369.64
224	338	0.008		0.000	0.001		0.008		0.000	−0.001	−6.18	374.66			−6.18	374.00
225	339	0.017		0.000	0.002		0.018		0.000	−0.002	−7.12	380.64			−7.12	379.96
$Z = 115$																
157	272	0.167		0.047	−0.002		0.182		−0.045	−0.006	−3.33	172.65			−3.38	177.83
158	273	0.167		0.053	−0.006		0.182		−0.052	−0.004	−3.52	171.29			−3.56	176.34
159	274	0.175		0.067	−0.013		0.192		−0.069	0.000	−3.96	171.28			−4.00	176.18

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 115$																
160	275	0.175		0.073	−0.015		0.192		−0.076	0.001	−4.21	170.11			−4.23	174.89
161	276	0.183		0.080	−0.019		0.202		−0.084	0.003	−4.70	170.29			−4.72	174.93
162	277	0.183		0.087	−0.022		0.202		−0.092	0.004	−4.96	169.37			−4.96	173.90
163	278	0.183		0.087	−0.025		0.202		−0.093	0.007	−5.33	169.91			−5.33	174.30
164	279	0.050		−0.013	0.002		0.053		0.017	−0.001	−5.79	169.04			−5.80	173.29
165	280	0.050		−0.013	0.001		0.053		0.017	0.000	−6.30	169.68			−6.30	173.80
166	281	0.050		−0.020	0.002		0.053		0.025	−0.001	−6.45	169.37			−6.45	173.36
167	282	0.050		−0.020	0.005		0.053		0.025	−0.004	−6.86	170.34			−6.86	174.21
168	283	0.050		−0.020	0.008		0.053		0.025	−0.007	−6.95	170.32			−6.95	174.07
169	284	0.058		−0.013	0.012		0.062		0.017	−0.011	−7.40	171.49			−7.39	175.12
170	285	0.058		−0.013	0.014		0.062		0.017	−0.013	−7.43	171.75			−7.42	175.26
171	286	0.067		0.000	0.012		0.071		0.002	−0.012	−7.84	173.19			−7.83	176.58
172	287	−0.092		−0.020	−0.003		−0.096		0.027	0.001	−7.76	173.79			−7.76	177.06
173	288	−0.083		−0.013	−0.002		−0.087		0.018	0.001	−8.16	175.46			−8.16	178.61
174	289	0.050		0.013	−0.003		0.053		−0.015	0.002	−8.17	176.21			−8.17	179.25
175	290	−0.075		0.000	−0.002		−0.079		0.002	0.002	−8.52	178.13			−8.53	181.06
176	291	−0.058		0.000	−0.004		−0.061		0.001	0.004	−8.66	178.97			−8.66	181.79
177	292	−0.058		0.007	−0.002		−0.061		−0.007	0.002	−8.98	181.14			−8.99	183.85
178	293	−0.042		0.000	−0.007		−0.044		0.001	0.007	−9.10	182.22			−9.10	184.83
179	294	−0.025		0.000	−0.002		−0.026		0.000	0.002	−9.44	184.58			−9.45	187.08
180	295	−0.008		0.000	0.000		−0.008		0.000	0.000	−9.09	186.34			−9.09	188.74
181	296	−0.008		0.000	0.000		−0.008		0.000	0.000	−9.16	189.18			−9.17	191.47
182	297	0.000		0.000	−0.001		0.000		0.000	0.001	−8.59	191.36			−8.60	193.56
183	298	0.000		0.000	−0.001		0.000		0.000	0.001	−8.46	194.61			−8.46	196.71
184	299	0.000		0.000	−0.001		0.000		0.000	0.001	−7.78	197.10			−7.79	199.11
185	300	0.000		0.000	−0.002		0.000		0.000	0.002	−6.70	201.50			−6.70	203.41
186	301	0.000		0.000	−0.001		0.000		0.000	0.001	−6.19	204.03			−6.19	205.85
187	302	0.000	0.013	0.000	0.000	−0.001	0.000	−0.017	0.000	0.000	−5.06	208.67			−5.06	210.40
188	303	0.000		0.000	−0.001		0.000		0.000	0.001	−4.34	211.60			−4.35	213.24
189	304	0.000	0.014	0.000	0.000	−0.001	0.000	−0.019	0.000	0.000	−3.33	216.31			−3.34	217.87
190	305	0.000		0.000	−0.001		0.000		0.000	0.001	−2.66	219.40			−2.67	220.87
191	306	0.000		0.000	0.000		0.000		0.000	0.000	−1.76	224.19			−1.76	225.58
192	307	0.000		0.000	−0.001		0.000		0.000	0.001	−1.19	227.37			−1.19	228.67
193	308	0.000	0.035	0.000	0.000	−0.002	0.001	−0.047	0.001	0.001	−0.50	232.12			−0.49	233.37
194	309	0.000	0.018	0.000	0.000	−0.001	0.000	−0.024	0.000	0.000	0.01	235.43			0.01	236.58
195	310	0.083		−0.040	−0.015		0.089		0.051	0.020	−1.02	238.65			−0.89	239.85
196	311	0.100		−0.040	−0.011		0.107		0.053	0.017	−0.70	241.95			−0.57	243.08
197	312	0.300		0.027	−0.002		0.331		0.006	−0.003	−0.95	246.13			−0.71	247.29
198	313	0.300		0.033	−0.004		0.331		−0.001	−0.004	−0.98	249.27			−0.71	250.38
199	314	0.300		0.033	−0.002		0.331		−0.001	−0.005	−1.31	253.55			−1.05	254.59
200	315	0.292		0.033	−0.004		0.322		−0.003	−0.004	−1.40	256.79			−1.13	257.77
201	316	0.283		0.033	−0.003		0.312		−0.006	−0.005	−1.78	261.19			−1.53	262.09
202	317	0.275		0.033	−0.001		0.303		−0.007	−0.007	−1.80	264.69			−1.54	265.53
203	318	0.275		0.027	0.002		0.302		0.000	−0.007	−1.92	269.52			−1.67	270.28
204	319	0.267		0.033	−0.002		0.294		−0.009	−0.006	−1.66	273.47			−1.39	274.18
205	320	0.267		0.040	−0.005		0.294		−0.018	−0.005	−1.71	278.54			−1.44	279.19
206	321	0.258		0.040	−0.007		0.284		−0.021	−0.003	−1.32	282.79			−1.04	283.39
207	322	0.258		0.047	−0.010		0.284		−0.029	−0.002	−1.47	287.91			−1.18	288.47
208	323	0.250		0.053	−0.013		0.276		−0.039	−0.001	−1.13	292.28			−0.81	292.81
209	324	0.258		0.067	−0.015		0.286		−0.054	−0.003	−1.52	297.33			−1.13	297.88
210	325	0.142		−0.007	0.020		0.152		0.018	−0.018	−1.43	301.61			−1.27	301.87
211	326	0.133		−0.007	0.020		0.143		0.017	−0.018	−1.73	306.92			−1.58	307.11
212	327	0.133		0.000	0.018		0.143		0.008	−0.018	−1.81	311.19			−1.67	311.32
213	328	0.125		0.000	0.019		0.134		0.008	−0.019	−2.06	316.70			−1.93	316.77
214	329	0.125		0.007	0.018		0.134		−0.001	−0.019	−2.23	321.03			−2.10	321.06
215	330	0.125		0.007	0.016		0.134		−0.001	−0.017	−2.54	326.64			−2.42	326.61
216	331	0.117		0.013	0.012		0.126		−0.009	−0.013	−2.73	331.11			−2.63	331.02

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 115																
217	332	0.108		0.020	0.008		0.116		−0.019	−0.010	−3.04	336.88			−2.95	336.72
218	333	0.100		0.027	0.003		0.108		−0.028	−0.006	−3.11	341.62			−3.02	341.42
219	334	0.100		0.027	−0.001		0.108		−0.028	−0.002	−3.54	347.42			−3.45	347.16
220	335	0.100		0.033	−0.005		0.108		−0.036	0.001	−3.82	352.11			−3.70	351.84
221	336	0.092		0.040	−0.010		0.099		−0.045	0.006	−4.34	357.95			−4.18	357.68
222	337	0.067		0.027	−0.006		0.072		−0.031	0.004	−4.87	362.53			−4.80	362.15
223	338	0.050		0.020	−0.004		0.053		−0.023	0.003	−5.76	368.15			−5.73	367.69
224	339	0.033		0.007	0.000		0.035		−0.008	0.000	−6.39	372.79			−6.39	372.25
Z = 116																
159	275	0.175		0.060	−0.011		0.192		−0.060	0.000	−3.42	179.26			−3.47	184.59
160	276	0.175		0.067	−0.014		0.192		−0.069	0.001	−3.66	177.77			−3.69	182.97
161	277	0.175		0.073	−0.016		0.192		−0.076	0.002	−4.15	177.93			−4.18	182.98
162	278	0.175		0.080	−0.019		0.193		−0.085	0.004	−4.41	176.67			−4.41	181.60
163	279	0.175		0.080	−0.021		0.193		−0.085	0.006	−4.77	177.20			−4.77	181.99
164	280	0.058		−0.013	0.004		0.062		0.017	−0.003	−5.48	175.74			−5.48	180.39
165	281	0.058		−0.013	0.003		0.062		0.017	−0.002	−5.99	176.35			−5.99	180.87
166	282	0.058		−0.020	0.006		0.062		0.026	−0.004	−6.18	175.65			−6.18	180.04
167	283	0.058		−0.020	0.008		0.062		0.026	−0.006	−6.64	176.56			−6.64	180.81
168	284	0.067		−0.013	0.013		0.071		0.018	−0.012	−6.78	176.15			−6.78	180.28
169	285	0.067		−0.013	0.017		0.071		0.018	−0.016	−7.21	177.32			−7.20	181.32
170	286	0.075		−0.007	0.021		0.080		0.011	−0.020	−7.22	177.28			−7.20	181.17
171	287	0.075		0.000	0.016		0.080		0.003	−0.016	−7.60	178.72			−7.59	182.48
172	288	−0.100		−0.013	−0.006		−0.104		0.019	0.004	−7.50	179.02			−7.50	182.65
173	289	0.075		0.020	−0.001		0.080		−0.022	−0.001	−7.83	180.73			−7.83	184.24
174	290	0.067		0.027	−0.009		0.072		−0.031	0.007	−7.81	181.18			−7.80	184.58
175	291	0.067		0.033	−0.015		0.072		−0.038	0.012	−8.07	183.18			−8.05	186.48
176	292	−0.067		0.007	−0.004		−0.070		−0.006	0.004	−8.30	183.61			−8.30	186.76
177	293	−0.067		0.007	−0.004		−0.070		−0.006	0.004	−8.62	185.76			−8.62	188.81
178	294	−0.042		0.000	−0.007		−0.044		0.001	0.007	−8.70	186.55			−8.70	189.49
179	295	−0.017		0.000	−0.001		−0.018		0.000	0.001	−8.98	188.96			−8.98	191.78
180	296	−0.008		0.000	0.000		−0.008		0.000	0.000	−8.58	190.44			−8.59	193.15
181	297	0.000		0.000	−0.001		0.000		0.000	0.001	−8.63	193.29			−8.63	195.90
182	298	0.000		0.000	0.000		0.000		0.000	0.000	−8.08	195.13			−8.09	197.63
183	299	0.000		0.000	−0.001		0.000		0.000	0.001	−7.94	198.37			−7.94	200.77
184	300	0.000		0.000	−0.001		0.000		0.000	0.001	−7.25	200.55			−7.26	202.86
185	301	0.000	0.013	0.000	0.000	−0.002	0.000	−0.017	0.000	0.000	−6.39	204.72			−6.39	206.93
186	302	0.000		0.000	−0.001		0.000		0.000	0.001	−5.66	207.15			−5.66	209.26
187	303	0.000	0.016	0.000	0.000	−0.001	0.000	−0.021	0.000	0.000	−4.54	211.76			−4.54	213.78
188	304	0.000		0.000	−0.001		0.000		0.000	0.001	−3.82	214.39			−3.82	216.31
189	305	0.000	0.023	0.000	0.000	−0.001	0.000	−0.031	0.000	0.000	−2.83	219.06			−2.82	220.90
190	306	0.000		0.000	−0.001		0.000		0.000	0.001	−2.15	221.84			−2.15	223.59
191	307	0.000	0.037	0.000	0.000	−0.001	0.001	−0.050	0.001	0.001	−1.32	226.54			−1.30	228.22
192	308	−0.183		0.013	−0.018		−0.190		−0.001	0.018	−0.62	229.54			−0.52	231.22
193	309	0.000	0.056	0.000	0.000	−0.001	0.001	−0.075	0.001	0.002	−0.11	234.11			−0.06	235.64
194	310	0.000		0.000	0.000		0.000		0.000	0.000	0.53	237.23			0.52	238.63
195	311	0.100	0.052	−0.047	0.007	−0.009	0.108	−0.072	0.063	0.002	−0.67	240.27			−0.50	241.77
196	312	0.100		−0.047	−0.006		0.107		0.062	0.013	−0.55	243.07			−0.41	244.46
197	313	0.108		−0.047	−0.005		0.116		0.062	0.012	−0.58	247.46			−0.44	248.77
198	314	0.300		0.033	−0.004		0.331		−0.001	−0.004	−0.94	249.95			−0.68	251.31
199	315	0.300		0.033	−0.001		0.331		−0.001	−0.006	−1.30	254.19			−1.04	255.47
200	316	0.300		0.033	−0.002		0.331		−0.001	−0.005	−1.34	257.19			−1.05	258.42
201	317	0.292		0.033	−0.002		0.322		−0.003	−0.005	−1.69	261.61			−1.43	262.74
202	318	0.283		0.033	−0.002		0.312		−0.005	−0.006	−1.71	264.80			−1.44	265.87
203	319	0.275		0.027	0.002		0.302		0.000	−0.007	−1.83	269.62			−1.58	270.61
204	320	0.275		0.033	−0.002		0.303		−0.007	−0.006	−1.56	273.28			−1.28	274.22
205	321	0.267		0.033	−0.003		0.294		−0.010	−0.005	−1.53	278.42			−1.27	279.28
206	322	0.267		0.040	−0.005		0.294		−0.018	−0.005	−1.21	282.30			−0.92	283.12

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 116$																
207	323	0.258		0.047	−0.008		0.284		−0.029	−0.004	−1.25	287.54			−0.96	288.30
208	324	0.258		0.053	−0.010		0.285		−0.037	−0.004	−1.04	291.48			−0.71	292.22
209	325	0.267		0.067	−0.014		0.296		−0.052	−0.005	−1.39	296.56			−0.99	297.30
210	326	0.275		0.080	−0.015		0.306		−0.066	−0.008	−1.27	300.58			−0.77	301.37
211	327	0.275		0.080	−0.013		0.307		−0.065	−0.010	−1.60	305.84			−1.10	306.57
212	328	0.117		−0.007	0.020		0.125		0.015	−0.019	−1.40	310.10			−1.27	310.40
213	329	0.117		0.000	0.021		0.126		0.007	−0.021	−1.76	315.50			−1.62	315.75
214	330	0.117		0.000	0.020		0.125		0.007	−0.020	−1.87	319.61			−1.73	319.81
215	331	0.117		0.007	0.017		0.126		−0.002	−0.018	−2.24	325.14			−2.12	325.27
216	332	0.108		0.007	0.012		0.116		−0.003	−0.013	−2.25	329.51			−2.17	329.55
217	333	0.100		0.013	0.008		0.107		−0.011	−0.009	−2.53	335.30			−2.46	335.27
218	334	0.100		0.020	0.004		0.108		−0.020	−0.006	−2.80	339.56			−2.73	339.49
219	335	0.100		0.027	−0.001		0.108		−0.028	−0.002	−3.27	345.30			−3.18	345.19
220	336	0.100		0.033	−0.005		0.108		−0.036	0.001	−3.55	349.71			−3.44	349.58
221	337	0.092		0.033	−0.009		0.099		−0.036	0.006	−4.10	355.51			−3.98	355.35
222	338	0.083		0.033	−0.011		0.089		−0.037	0.008	−4.51	359.95			−4.38	359.74
223	339	0.058		0.027	−0.007		0.062		−0.031	0.005	−5.55	365.40			−5.48	365.10
$Z = 117$																
161	278	0.158		0.067	−0.015		0.173		−0.071	0.003	−4.01	187.18			−4.05	192.65
162	279	0.075		0.000	0.003		0.080		0.002	−0.003	−4.61	185.55			−4.62	190.90
163	280	0.158		0.080	−0.018		0.174		−0.087	0.004	−4.55	186.17			−4.56	191.37
164	281	0.067		0.000	0.002		0.071		0.002	−0.002	−5.52	184.42			−5.53	189.48
165	282	0.058		−0.007	0.002		0.062		0.010	−0.001	−6.09	184.65			−6.10	189.57
166	283	0.067		−0.007	0.005		0.071		0.010	−0.004	−6.25	183.96			−6.25	188.75
167	284	0.067		−0.007	0.007		0.071		0.010	−0.006	−6.72	184.51			−6.73	189.16
168	285	0.067		−0.007	0.010		0.071		0.010	−0.009	−6.87	184.08			−6.87	188.60
169	286	0.075		0.000	0.013		0.080		0.003	−0.013	−7.27	184.94			−7.27	189.33
170	287	0.075		0.000	0.016		0.080		0.003	−0.016	−7.33	184.83			−7.32	189.09
171	288	0.075		0.007	0.012		0.080		−0.006	−0.012	−7.72	185.93			−7.72	190.06
172	289	0.075		0.013	0.005		0.080		−0.013	−0.006	−7.68	186.15			−7.68	190.15
173	290	0.075		0.020	−0.001		0.080		−0.022	−0.001	−8.03	187.51			−8.04	191.39
174	291	0.067		0.027	−0.009		0.072		−0.031	0.007	−8.02	187.94			−8.01	191.70
175	292	0.067		0.033	−0.015		0.072		−0.038	0.012	−8.30	189.59			−8.28	193.24
176	293	−0.083		0.013	−0.005		−0.087		−0.012	0.006	−8.21	190.31			−8.21	193.83
177	294	−0.083		0.020	−0.005		−0.087		−0.020	0.007	−8.44	192.23			−8.44	195.63
178	295	−0.067		0.013	−0.010		−0.070		−0.013	0.011	−8.55	192.98			−8.55	196.26
179	296	−0.033		0.007	−0.002		−0.035		−0.008	0.002	−8.96	194.93			−8.97	198.09
180	297	−0.008		0.000	0.000		−0.008		0.000	0.000	−8.57	196.39			−8.57	199.44
181	298	−0.008		0.000	0.000		−0.008		0.000	0.000	−8.59	198.94			−8.60	201.88
182	299	0.000		0.000	0.000		0.000		0.000	0.000	−8.02	200.79			−8.02	203.62
183	300	0.000		0.000	−0.001		0.000		0.000	0.001	−7.85	203.74			−7.86	206.46
184	301	0.000		0.000	−0.001		0.000		0.000	0.001	−7.16	205.91			−7.16	208.54
185	302	0.000	0.015	0.000	0.000	−0.002	0.000	−0.020	0.000	0.000	−6.29	209.77			−6.29	212.29
186	303	0.000		0.000	−0.001		0.000		0.000	0.001	−5.57	212.17			−5.57	214.59
187	304	0.000	0.021	0.000	0.000	−0.001	0.000	−0.028	0.000	0.000	−4.47	216.45			−4.47	218.78
188	305	0.000		0.000	−0.001		0.000		0.000	0.001	−3.74	219.08			−3.74	221.30
189	306	0.000		0.000	−0.001		0.000		0.000	0.001	−2.72	223.47			−2.72	225.59
190	307	0.000	0.010	0.000	0.000	−0.001	0.000	−0.013	0.000	0.000	−2.07	226.21			−2.07	228.24
191	308	0.000	0.047	0.007	0.000	0.000	0.001	−0.063	−0.007	0.001	−1.32	230.52			−1.29	232.49
192	309	−0.400		0.053	−0.002		−0.407		0.003	0.014	−2.24	231.88			−2.05	233.93
193	310	0.000		0.000	0.000		0.000		0.000	0.000	0.11	237.98			0.11	239.74
194	311	0.000		0.000	−0.001		0.000		0.000	0.001	0.53	240.88			0.53	242.55
195	312	0.100	0.067	−0.047	0.007	−0.014	0.109	−0.093	0.063	0.003	−0.83	243.45			−0.64	245.23
196	313	0.108		−0.047	−0.011		0.116		0.062	0.019	−0.43	246.51			−0.27	248.17
197	314	0.133		−0.047	−0.007		0.143		0.065	0.016	−0.19	250.86			−0.03	252.45
198	315	0.300		0.027	−0.003		0.331		0.006	−0.002	−1.26	252.64			−1.03	254.21
199	316	0.300		0.033	−0.004		0.331		−0.001	−0.004	−1.53	256.67			−1.30	258.16

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 117$																
200	317	0.300		0.033	−0.005		0.331		−0.001	−0.003	−1.58	259.64			−1.33	261.08
201	318	0.300		0.033	−0.004		0.331		−0.001	−0.004	−1.87	263.83			−1.62	265.18
202	319	0.283		0.027	−0.001		0.311		0.002	−0.004	−1.94	266.95			−1.70	268.23
203	320	0.283		0.027	0.000		0.311		0.002	−0.005	−1.99	271.55			−1.75	272.74
204	321	0.283		0.027	−0.002		0.311		0.002	−0.003	−1.70	275.22			−1.44	276.37
205	322	0.275		0.033	−0.005		0.303		−0.008	−0.003	−1.66	280.07			−1.41	281.14
206	323	0.275		0.040	−0.008		0.303		−0.017	−0.002	−1.31	283.96			−1.04	284.99
207	324	0.267		0.047	−0.011		0.294		−0.027	−0.001	−1.34	288.92			−1.06	289.88
208	325	0.267		0.053	−0.013		0.295		−0.035	−0.001	−1.09	292.89			−0.78	293.82
209	326	0.275		0.067	−0.016		0.305		−0.050	−0.003	−1.39	297.74			−1.01	298.66
210	327	0.283		0.080	−0.018		0.316		−0.064	−0.006	−1.21	301.80			−0.73	302.76
211	328	0.283		0.080	−0.017		0.316		−0.064	−0.007	−1.51	306.80			−1.04	307.70
212	329	0.117		0.000	0.017		0.125		0.007	−0.017	−1.43	310.94			−1.32	311.40
213	330	0.117		0.000	0.018		0.125		0.007	−0.018	−1.74	316.09			−1.62	316.50
214	331	0.108		0.007	0.015		0.116		−0.003	−0.016	−1.81	320.23			−1.71	320.57
215	332	0.108		0.013	0.013		0.116		−0.010	−0.014	−2.20	325.46			−2.11	325.73
216	333	0.100		0.020	0.008		0.108		−0.019	−0.010	−2.26	329.77			−2.18	329.98
217	334	0.100		0.020	0.005		0.108		−0.020	−0.007	−2.71	335.09			−2.64	335.24
218	335	0.100		0.027	0.001		0.108		−0.028	−0.004	−2.98	339.35			−2.90	339.45
219	336	0.100		0.033	−0.003		0.108		−0.035	−0.001	−3.46	344.80			−3.36	344.87
220	337	0.100		0.040	−0.007		0.108		−0.044	0.003	−3.73	349.21			−3.60	349.27
221	338	0.092		0.040	−0.011		0.099		−0.045	0.007	−4.32	354.69			−4.18	354.71
222	339	0.083		0.040	−0.014		0.089		−0.045	0.010	−4.72	359.12			−4.56	359.11
$Z = 118$																
163	281	0.167		0.080	−0.021		0.184		−0.086	0.006	−4.04	194.15			−4.07	199.77
164	282	0.058		0.000	0.001		0.062		0.001	−0.001	−5.07	192.01			−5.07	197.51
165	283	0.058		−0.007	0.001		0.062		0.010	0.000	−5.52	192.33			−5.53	197.68
166	284	0.058		−0.007	0.002		0.062		0.010	−0.001	−5.72	191.26			−5.73	196.47
167	285	0.067		−0.007	0.005		0.071		0.010	−0.004	−6.15	191.84			−6.16	196.90
168	286	0.075		0.007	0.007		0.080		−0.006	−0.007	−6.25	191.12			−6.26	196.05
169	287	−0.100		−0.007	−0.006		−0.104		0.012	0.005	−6.75	191.86			−6.76	196.65
170	288	0.075		0.013	0.011		0.080		−0.013	−0.012	−6.78	191.45			−6.78	196.11
171	289	0.075		0.013	0.009		0.080		−0.013	−0.010	−7.20	192.50			−7.20	197.02
172	290	−0.108		−0.013	−0.009		−0.112		0.020	0.007	−7.04	192.51			−7.04	196.90
173	291	0.075		0.033	−0.007		0.081		−0.037	0.004	−7.55	193.70			−7.54	197.96
174	292	0.075		0.040	−0.015		0.081		−0.046	0.012	−7.52	193.81			−7.49	197.97
175	293	0.075		0.040	−0.020		0.080		−0.046	0.017	−7.82	195.43			−7.78	199.47
176	294	−0.083		0.013	−0.005		−0.087		−0.012	0.006	−7.67	195.88			−7.67	199.77
177	295	−0.083		0.020	−0.005		−0.087		−0.020	0.007	−7.89	197.79			−7.89	201.56
178	296	−0.075		0.013	−0.011		−0.079		−0.013	0.012	−7.90	198.32			−7.89	201.97
179	297	−0.033		0.007	−0.002		−0.035		−0.008	0.002	−8.27	200.29			−8.27	203.81
180	298	−0.008		0.000	0.000		−0.008		0.000	0.000	−7.83	201.48			−7.83	204.88
181	299	−0.008		0.000	0.000		−0.008		0.000	0.000	−7.84	204.02			−7.84	207.31
182	300	0.000		0.000	−0.001		0.000		0.000	0.001	−7.24	205.58			−7.25	208.76
183	301	0.000		0.000	−0.001		0.000		0.000	0.001	−7.05	208.54			−7.05	211.60
184	302	0.000		0.000	−0.001		0.000		0.000	0.001	−6.36	210.40			−6.36	213.35
185	303	0.000	0.012	0.007	0.000	0.000	0.000	−0.016	−0.008	0.000	−5.29	214.43			−5.29	217.28
186	304	0.000		0.000	−0.001		0.000		0.000	0.001	−4.78	216.31			−4.79	219.05
187	305	0.000	0.028	0.007	0.000	0.000	0.000	−0.037	−0.008	0.001	−3.67	220.59			−3.66	223.24
188	306	0.000		0.000	0.000		0.000		0.000	0.000	−2.95	222.88			−2.95	225.42
189	307	0.000	0.047	0.000	0.000	−0.001	0.001	−0.063	0.001	0.001	−2.05	227.14			−2.03	229.60
190	308	0.000	0.038	0.000	0.000	−0.001	0.001	−0.051	0.001	0.001	−1.31	229.66			−1.29	232.02
191	309	0.000	0.063	0.007	0.000	0.000	0.002	−0.084	−0.007	0.003	−0.66	233.86			−0.61	236.15
192	310	0.000		0.000	0.000		0.000		0.000	0.000	0.16	236.66			0.16	238.80
193	311	0.000	0.084	0.007	0.000	0.000	0.003	−0.113	−0.005	0.004	0.38	240.60			0.47	242.75
194	312	0.000	0.084	0.000	0.000	−0.001	0.003	−0.113	0.003	0.005	0.76	243.15			0.87	245.22
195	313	0.483		−0.013	0.019		0.541		0.129	0.015	−5.04	241.27			−4.37	243.82

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 118$																
196	314	0.483		−0.007	0.016		0.542		0.121	0.014	−4.91	243.77			−4.20	246.25
197	315	0.483		0.000	0.014		0.543		0.112	0.011	−5.13	247.65			−4.48	249.99
198	316	0.308		0.033	−0.002		0.340		0.001	−0.005	−1.41	253.91			−1.16	255.76
199	317	0.300		0.033	−0.002		0.331		−0.001	−0.005	−1.55	258.05			−1.32	259.81
200	318	0.300		0.033	−0.003		0.331		−0.001	−0.004	−1.59	260.74			−1.34	262.43
201	319	0.300		0.033	−0.002		0.331		−0.001	−0.005	−1.88	264.90			−1.63	266.51
202	320	0.292		0.033	−0.002		0.322		−0.003	−0.005	−1.82	267.87			−1.56	269.41
203	321	0.283		0.027	0.000		0.311		0.002	−0.005	−1.99	272.33			−1.75	273.77
204	322	0.283		0.027	−0.001		0.311		0.002	−0.004	−1.69	275.71			−1.43	277.10
205	323	0.283		0.033	−0.004		0.312		−0.006	−0.004	−1.64	280.56			−1.38	281.88
206	324	0.283		0.040	−0.007		0.312		−0.015	−0.003	−1.28	284.18			−0.99	285.45
207	325	0.275		0.047	−0.010		0.304		−0.025	−0.002	−1.31	289.12			−1.02	290.31
208	326	0.275		0.053	−0.012		0.304		−0.033	−0.002	−1.04	292.81			−0.72	293.97
209	327	0.275		0.067	−0.015		0.305		−0.050	−0.004	−1.20	297.79			−0.82	298.93
210	328	0.292		0.080	−0.017		0.326		−0.062	−0.007	−0.99	301.59			−0.51	302.77
211	329	0.358		−0.033	0.011		0.394		0.100	0.015	−2.63	305.24			−1.91	306.60
212	330	0.358		−0.033	0.010		0.394		0.100	0.016	−2.64	309.00			−1.87	310.34
213	331	0.358		−0.033	0.010		0.394		0.100	0.016	−2.86	314.23			−2.10	315.50
214	332	0.117		0.013	0.014		0.126		−0.009	−0.015	−1.44	319.58			−1.34	320.12
215	333	0.117		0.013	0.012		0.126		−0.009	−0.013	−1.79	324.84			−1.70	325.31
216	334	0.100		0.027	0.005		0.108		−0.028	−0.008	−1.79	328.92			−1.71	329.33
217	335	0.100		0.027	0.002		0.108		−0.028	−0.005	−2.28	334.20			−2.20	334.54
218	336	0.100		0.033	−0.003		0.108		−0.035	−0.001	−2.56	338.17			−2.46	338.47
219	337	0.100		0.040	−0.006		0.108		−0.044	0.002	−3.04	343.60			−2.91	343.88
220	338	0.100		0.040	−0.010		0.108		−0.044	0.006	−3.35	347.69			−3.21	347.93
221	339	0.092		0.040	−0.014		0.099		−0.045	0.010	−3.95	353.15			−3.80	353.35
$Z = 119$																
165	284	0.067		0.013	−0.002		0.072		−0.014	0.001	−5.36	201.62			−5.37	207.40
166	285	0.075		0.020	−0.001		0.080		−0.022	−0.001	−5.45	200.64			−5.46	206.28
167	286	0.075		0.013	0.002		0.080		−0.013	−0.003	−5.96	200.81			−5.97	206.30
168	287	−0.100		−0.007	−0.007		−0.104		0.012	0.006	−6.29	199.83			−6.30	205.18
169	288	−0.100		−0.007	−0.007		−0.104		0.012	0.006	−6.71	200.32			−6.72	205.52
170	289	0.083		0.027	0.004		0.089		−0.029	−0.006	−6.58	200.05			−6.58	205.12
171	290	0.083		0.027	0.002		0.089		−0.029	−0.004	−7.05	200.73			−7.05	205.66
172	291	0.075		0.033	−0.006		0.081		−0.037	0.003	−7.15	200.46			−7.14	205.26
173	292	0.083		0.040	−0.011		0.089		−0.045	0.007	−7.45	201.52			−7.45	206.19
174	293	0.075		0.040	−0.017		0.081		−0.046	0.014	−7.58	201.46			−7.55	206.01
175	294	0.075		0.047	−0.023		0.081		−0.055	0.019	−7.89	202.74			−7.85	207.18
176	295	0.067		0.040	−0.023		0.072		−0.047	0.020	−7.67	203.25			−7.63	207.56
177	296	−0.092		0.020	−0.007		−0.096		−0.020	0.009	−7.63	205.09			−7.63	209.24
178	297	−0.075		0.013	−0.012		−0.079		−0.013	0.013	−7.75	205.48			−7.75	209.51
179	298	−0.042		0.007	−0.004		−0.044		−0.007	0.004	−8.11	207.16			−8.11	211.05
180	299	−0.017		0.007	0.001		−0.018		−0.008	−0.001	−7.79	208.20			−7.79	211.97
181	300	−0.008		0.007	0.001		−0.008		−0.008	−0.001	−7.73	210.50			−7.73	214.15
182	301	0.000		0.000	−0.001		0.000		0.000	0.001	−7.09	212.08			−7.09	215.62
183	302	0.000		0.000	−0.001		0.000		0.000	0.001	−6.88	214.74			−6.88	218.16
184	303	0.000		0.000	−0.001		0.000		0.000	0.001	−6.18	216.59			−6.18	219.89
185	304	0.000	0.018	0.007	0.000	0.000	0.000	−0.024	−0.008	0.000	−5.11	220.31			−5.11	223.50
186	305	0.000		0.000	−0.001		0.000		0.000	0.001	−4.60	222.18			−4.61	225.25
187	306	0.000	0.042	0.007	0.000	0.000	0.001	−0.056	−0.008	0.001	−3.47	226.16			−3.45	229.15
188	307	0.000		0.007	0.000		0.000		−0.008	0.000	−2.78	228.41			−2.78	231.27
189	308	0.000	0.055	0.007	0.000	0.000	0.001	−0.074	−0.007	0.002	−1.93	232.31			−1.90	235.10
190	309	0.000	0.055	0.007	0.000	0.000	0.001	−0.074	−0.007	0.002	−1.18	234.82			−1.15	237.51
191	310	0.000	0.073	0.013	0.000	0.000	0.002	−0.097	−0.013	0.003	−0.59	238.65			−0.53	241.27
192	311	0.000	0.076	0.007	0.000	0.000	0.003	−0.102	−0.006	0.004	−0.08	241.12			−0.01	243.65
193	312	0.000	0.088	0.020	0.000	0.002	0.004	−0.117	−0.020	0.005	0.43	245.06			0.53	247.52
194	313	0.000	0.090	0.013	0.000	0.000	0.004	−0.120	−0.012	0.005	0.77	247.56			0.88	249.93

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 119$																
195	314	0.475		−0.020	0.019		0.531		0.134	0.018	−5.33	245.07			−4.73	247.84
196	315	0.483		−0.013	0.017		0.541		0.128	0.017	−5.31	247.43			−4.65	250.16
197	316	0.483		−0.007	0.015		0.542		0.120	0.015	−5.53	251.02			−4.92	253.60
198	317	0.325		0.033	0.002		0.360		0.007	−0.009	−1.99	257.08			−1.75	259.21
199	318	0.300		0.027	0.000		0.331		0.007	−0.005	−1.93	261.12			−1.73	263.12
200	319	0.300		0.027	−0.001		0.331		0.006	−0.004	−1.96	263.81			−1.74	265.75
201	320	0.300		0.033	−0.003		0.331		−0.001	−0.004	−2.15	267.77			−1.93	269.62
202	321	0.300		0.033	−0.002		0.331		−0.001	−0.005	−2.04	270.77			−1.80	272.56
203	322	0.292		0.027	0.001		0.322		0.005	−0.006	−2.18	274.97			−1.95	276.67
204	323	0.292		0.027	−0.002		0.322		0.004	−0.003	−1.86	278.36			−1.62	279.99
205	324	0.292		0.033	−0.005		0.322		−0.004	−0.003	−1.76	282.97			−1.51	284.52
206	325	0.292		0.033	−0.006		0.322		−0.004	−0.002	−1.39	286.58			−1.12	288.08
207	326	0.283		0.040	−0.008		0.312		−0.015	−0.002	−1.43	291.22			−1.17	292.63
208	327	0.283		0.053	−0.011		0.313		−0.031	−0.004	−1.13	294.94			−0.82	296.32
209	328	0.283		0.067	−0.014		0.314		−0.048	−0.005	−1.29	299.61			−0.95	300.96
210	329	0.292		0.073	−0.015		0.325		−0.053	−0.007	−1.10	303.39			−0.69	304.73
211	330	0.367		−0.027	0.006		0.405		0.095	0.018	−3.10	306.40			−2.43	307.93
212	331	0.358		−0.027	0.004		0.394		0.092	0.019	−3.00	310.25			−2.31	311.73
213	332	0.358		−0.027	0.004		0.394		0.092	0.019	−3.21	315.21			−2.53	316.61
214	333	0.108		0.020	0.009		0.116		−0.019	−0.011	−1.15	321.18			−1.08	321.91
215	334	0.108		0.027	0.007		0.117		−0.027	−0.010	−1.57	326.09			−1.48	326.77
216	335	0.100		0.033	0.001		0.108		−0.035	−0.005	−1.66	330.08			−1.57	330.69
217	336	0.100		0.040	−0.002		0.108		−0.044	−0.002	−2.18	335.04			−2.06	335.62
218	337	0.100		0.040	−0.007		0.108		−0.044	0.003	−2.50	338.96			−2.37	339.48
219	338	0.100		0.040	−0.010		0.108		−0.044	0.006	−3.03	344.06			−2.90	344.53
220	339	0.100		0.040	−0.013		0.108		−0.044	0.009	−3.34	348.14			−3.19	348.56
$Z = 120$																
167	287	−0.092		−0.007	−0.005		−0.096		0.012	0.004	−5.53	208.74			−5.54	214.67
168	288	−0.108		−0.007	−0.007		−0.113		0.013	0.006	−5.68	207.61			−5.69	213.40
169	289	−0.117		−0.007	−0.008		−0.122		0.014	0.006	−6.02	208.15			−6.04	213.79
170	290	−0.117		−0.007	−0.009		−0.122		0.014	0.007	−6.12	207.32			−6.13	212.82
171	291	−0.125		−0.007	−0.012		−0.130		0.015	0.010	−6.37	208.20			−6.38	213.54
172	292	−0.125		−0.013	−0.014		−0.130		0.022	0.011	−6.30	207.76			−6.31	212.98
173	293	0.083		0.040	−0.013		0.089		−0.045	0.009	−6.81	208.61			−6.80	213.70
174	294	0.075		0.040	−0.019		0.081		−0.046	0.016	−6.92	208.23			−6.90	213.20
175	295	0.075		0.047	−0.025		0.081		−0.055	0.021	−7.25	209.48			−7.20	214.33
176	296	−0.092		0.013	−0.007		−0.096		−0.011	0.008	−6.77	209.92			−6.77	214.59
177	297	−0.083		0.013	−0.007		−0.087		−0.012	0.008	−7.09	211.39			−7.09	215.93
178	298	−0.075		0.013	−0.012		−0.079		−0.013	0.013	−7.02	211.66			−7.01	216.07
179	299	−0.033		0.007	−0.002		−0.035		−0.008	0.002	−7.36	213.32			−7.37	217.59
180	300	−0.008		0.007	0.001		−0.008		−0.008	−0.001	−6.95	214.14			−6.95	218.29
181	301	−0.008		0.007	0.001		−0.008		−0.008	−0.001	−6.92	216.38			−6.93	220.41
182	302	0.000		0.007	0.000		0.000		−0.008	0.000	−6.31	217.62			−6.32	221.52
183	303	0.000		0.007	0.000		0.000		−0.008	0.000	−6.08	220.29			−6.08	224.07
184	304	0.000		0.000	−0.001		0.000		0.000	0.001	−5.37	221.83			−5.38	225.49
185	305	0.000	0.032	0.007	0.000	0.000	0.000	−0.043	−0.008	0.001	−4.39	225.44			−4.39	229.00
186	306	0.000		0.000	−0.001		0.000		0.000	0.001	−3.79	227.09			−3.79	230.52
187	307	0.000	0.050	0.007	0.000	0.000	0.001	−0.067	−0.007	0.002	−2.71	231.00			−2.69	234.34
188	308	0.000	0.044	0.007	0.000	0.000	0.001	−0.059	−0.007	0.001	−1.93	233.04			−1.91	236.26
189	309	0.000	0.070	0.007	0.000	0.000	0.002	−0.094	−0.006	0.003	−1.25	236.74			−1.21	239.89
190	310	0.000	0.076	0.007	0.000	0.000	0.003	−0.102	−0.006	0.004	−0.51	238.94			−0.44	242.00
191	311	0.000	0.091	0.013	0.000	0.000	0.004	−0.122	−0.012	0.005	0.00	242.67			0.09	245.65
192	312	0.000	0.094	0.007	0.000	0.000	0.004	−0.126	−0.005	0.006	0.43	244.76			0.54	247.65
193	313	0.000	0.108	0.013	0.000	0.000	0.005	−0.145	−0.011	0.007	0.80	248.54			0.94	251.36
194	314	0.000	0.109	0.007	0.000	0.000	0.005	−0.147	−0.003	0.008	1.09	250.67			1.25	253.41
195	315	0.475		−0.020	0.019		0.531		0.134	0.018	−5.50	247.69			−4.89	250.78
196	316	0.483		−0.013	0.018		0.541		0.128	0.016	−5.49	249.74			−4.83	252.78

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 120$																
197	317	0.483		−0.007	0.016		0.542		0.121	0.014	−5.71	253.31			−5.09	256.21
198	318	0.483		0.000	0.014		0.543		0.112	0.011	−5.53	255.71			−4.89	258.54
199	319	0.300		0.027	0.003		0.331		0.007	−0.008	−1.98	263.23			−1.78	265.53
200	320	0.300		0.033	−0.002		0.331		−0.001	−0.005	−1.91	265.72			−1.68	267.95
201	321	0.300		0.033	−0.001		0.331		−0.001	−0.006	−2.19	269.58			−1.97	271.71
202	322	0.300		0.033	0.000		0.331		−0.001	−0.007	−2.09	272.28			−1.84	274.36
203	323	0.292		0.027	0.003		0.322		0.005	−0.008	−2.22	276.47			−1.99	278.44
204	324	0.300		0.027	−0.001		0.331		0.006	−0.004	−1.85	279.61			−1.59	281.53
205	325	0.292		0.033	−0.002		0.322		−0.003	−0.005	−1.78	284.17			−1.54	285.99
206	326	0.292		0.033	−0.003		0.322		−0.003	−0.005	−1.43	287.48			−1.16	289.24
207	327	0.292		0.047	−0.007		0.323		−0.021	−0.006	−1.46	292.12			−1.17	293.81
208	328	0.292		0.053	−0.009		0.324		−0.028	−0.006	−1.17	295.53			−0.85	297.17
209	329	0.292		0.067	−0.014		0.325		−0.046	−0.006	−1.30	300.23			−0.94	301.83
210	330	0.300		0.080	−0.017		0.335		−0.060	−0.008	−1.00	303.83			−0.55	305.45
211	331	0.300		0.080	−0.016		0.335		−0.060	−0.009	−1.23	308.60			−0.78	310.14
212	332	0.300		0.080	−0.014		0.335		−0.059	−0.011	−1.04	312.25			−0.56	313.74
213	333	0.367		−0.020	0.002		0.405		0.086	0.018	−3.22	315.22			−2.54	316.85
214	334	0.158		−0.007	0.013		0.170		0.020	−0.011	−0.83	321.24			−0.70	322.25
215	335	0.125		0.013	0.007		0.135		−0.009	−0.009	−0.92	326.47			−0.84	327.35
216	336	0.108		0.027	0.001		0.116		−0.027	−0.004	−1.16	330.02			−1.08	330.84
217	337	0.100		0.040	−0.003		0.108		−0.044	−0.001	−1.56	335.09			−1.44	335.88
218	338	0.100		0.040	−0.009		0.108		−0.044	0.005	−1.87	338.73			−1.75	339.47
219	339	0.100		0.040	−0.012		0.108		−0.044	0.008	−2.41	343.82			−2.28	344.50
$Z = 121$																
169	290	−0.133		−0.007	−0.009		−0.138		0.015	0.007	−5.87	217.46			−5.90	223.53
170	291	−0.133		−0.007	−0.011		−0.138		0.016	0.009	−5.98	216.59			−6.00	222.52
171	292	−0.133		−0.013	−0.013		−0.138		0.023	0.010	−6.30	217.07			−6.32	222.85
172	293	−0.133		−0.013	−0.016		−0.138		0.023	0.013	−6.24	216.61			−6.25	222.26
173	294	−0.117		−0.013	−0.012		−0.122		0.021	0.010	−6.57	217.31			−6.58	222.81
174	295	0.067		0.040	−0.018		0.072		−0.046	0.015	−6.50	217.09			−6.48	222.47
175	296	0.067		0.040	−0.024		0.072		−0.047	0.021	−6.80	218.04			−6.77	223.29
176	297	−0.083		0.007	−0.007		−0.087		−0.005	0.007	−6.54	218.24			−6.55	223.33
177	298	−0.083		0.013	−0.005		−0.087		−0.012	0.006	−6.75	219.51			−6.75	224.45
178	299	−0.067		0.013	−0.010		−0.070		−0.013	0.011	−6.73	219.69			−6.73	224.51
179	300	−0.033		0.013	0.000		−0.035		−0.015	0.001	−7.11	221.01			−7.11	225.69
180	301	−0.017		0.013	0.002		−0.018		−0.015	−0.002	−6.75	221.76			−6.75	226.31
181	302	−0.008		0.013	0.001		−0.008		−0.015	−0.001	−6.65	223.76			−6.65	228.18
182	303	0.000		0.007	0.000		0.000		−0.008	0.000	−6.02	225.00			−6.02	229.29
183	304	0.000		0.007	0.000		0.000		−0.008	0.000	−5.76	227.37			−5.77	231.53
184	305	0.000		0.000	−0.001		0.000		0.000	0.001	−5.05	228.90			−5.05	232.94
185	306	0.000	0.051	0.013	0.000	0.000	0.001	−0.068	−0.014	0.002	−3.80	232.47			−3.78	236.41
186	307	0.000	0.031	0.007	0.000	0.000	0.000	−0.041	−0.008	0.001	−3.39	233.90			−3.39	237.71
187	308	0.000	0.062	0.013	0.000	0.000	0.002	−0.083	−0.014	0.002	−2.42	237.40			−2.38	241.12
188	309	0.000	0.067	0.007	0.000	0.000	0.002	−0.090	−0.006	0.003	−1.69	239.36			−1.66	242.97
189	310	0.000	0.083	0.007	0.000	0.000	0.003	−0.111	−0.005	0.004	−1.17	242.61			−1.11	246.13
190	311	0.000	0.087	0.007	0.000	0.000	0.003	−0.117	−0.005	0.005	−0.48	244.73			−0.41	248.15
191	312	0.000	0.097	0.013	0.000	0.000	0.004	−0.130	−0.012	0.006	−0.09	248.04			0.00	251.37
192	313	0.000	0.101	0.007	0.000	0.000	0.005	−0.136	−0.004	0.007	0.30	250.07			0.41	253.31
193	314	0.000	0.111	0.013	0.000	0.000	0.005	−0.149	−0.010	0.008	0.60	253.48			0.74	256.64
194	315	0.000	0.113	0.007	0.000	0.000	0.006	−0.152	−0.003	0.008	0.86	255.58			1.02	258.64
195	316	0.475		−0.020	0.018		0.531		0.133	0.019	−5.95	252.06			−5.43	255.39
196	317	0.475		−0.020	0.019		0.531		0.134	0.018	−5.79	254.25			−5.20	257.54
197	318	0.483		−0.007	0.015		0.542		0.120	0.015	−6.13	257.40			−5.60	260.52
198	319	0.483		0.000	0.013		0.543		0.111	0.012	−5.94	259.80			−5.39	262.85
199	320	0.308		0.033	0.002		0.341		0.002	−0.009	−2.43	266.97			−2.25	269.56
200	321	0.300		0.027	0.001		0.331		0.007	−0.006	−2.30	269.51			−2.11	272.01
201	322	0.300		0.033	−0.001		0.331		−0.001	−0.006	−2.49	273.17			−2.30	275.57

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 121$																
202	323	0.300		0.027	0.002		0.331		0.007	−0.007	−2.46	275.77			−2.25	278.11
203	324	0.300		0.027	0.003		0.331		0.007	−0.008	−2.47	279.80			−2.26	282.04
204	325	0.300		0.027	−0.001		0.331		0.006	−0.004	−2.14	282.89			−1.91	285.06
205	326	0.300		0.027	−0.005		0.331		0.006	0.000	−1.98	287.25			−1.75	289.33
206	327	0.300		0.033	−0.005		0.331		−0.001	−0.003	−1.67	290.50			−1.42	292.51
207	328	0.300		0.040	−0.005		0.332		−0.010	−0.005	−1.65	294.89			−1.40	296.82
208	329	−0.467		0.047	−0.006		−0.471		0.031	0.012	−1.13	298.52			−0.72	300.53
209	330	0.300		0.067	−0.012		0.334		−0.043	−0.008	−1.47	302.73			−1.14	304.57
210	331	0.300		0.073	−0.014		0.335		−0.051	−0.008	−1.27	306.21			−0.89	308.02
211	332	0.300		0.080	−0.016		0.335		−0.060	−0.009	−1.40	310.79			−1.00	312.54
212	333	0.300		0.080	−0.014		0.335		−0.059	−0.011	−1.22	314.42			−0.79	316.12
213	334	0.367		−0.013	−0.001		0.406		0.077	0.017	−3.33	317.18			−2.73	318.98
214	335	0.158		−0.013	0.013		0.170		0.027	−0.010	−0.77	323.36			−0.64	324.61
215	336	0.158		−0.007	0.012		0.170		0.020	−0.010	−1.04	328.12			−0.92	329.29
216	337	0.133		0.007	0.001		0.143		−0.001	−0.002	−0.87	332.07			−0.80	333.11
217	338	0.108		0.027	−0.005		0.116		−0.028	0.002	−1.35	336.78			−1.28	337.76
218	339	0.100		0.040	−0.011		0.108		−0.044	0.007	−1.49	340.59			−1.36	341.55
$Z = 122$																
172	294	−0.150		−0.013	−0.017		−0.155		0.025	0.013	−5.67	224.38			−5.69	230.47
173	295	−0.133		−0.013	−0.013		−0.138		0.023	0.010	−5.92	225.13			−5.93	231.08
174	296	−0.125		−0.007	−0.013		−0.130		0.015	0.011	−5.76	224.69			−5.77	230.49
175	297	0.075		0.040	−0.024		0.080		−0.046	0.020	−5.84	225.84			−5.82	231.52
176	298	−0.092		0.013	−0.007		−0.096		−0.011	0.008	−5.73	225.57			−5.74	231.08
177	299	−0.092		0.020	−0.006		−0.096		−0.020	0.008	−5.85	226.90			−5.85	232.27
178	300	0.008		0.020	−0.003		0.009		−0.024	0.003	−6.27	226.33			−6.27	231.57
179	301	0.008		0.013	−0.003		0.009		−0.015	0.003	−6.56	227.71			−6.56	232.81
180	302	0.375		0.033	0.015		0.418		0.026	−0.020	−6.21	228.13			−6.22	233.09
181	303	−0.008		0.007	0.001		−0.008		−0.008	−0.001	−5.77	230.45			−5.78	235.28
182	304	0.000		0.007	0.000		0.000		−0.008	0.000	−5.14	231.38			−5.14	236.08
183	305	0.000		0.007	0.000		0.000		−0.008	0.000	−4.88	233.74			−4.88	238.30
184	306	0.000		0.000	−0.001		0.000		0.000	0.001	−4.16	234.97			−4.16	239.40
185	307	0.000	0.053	0.007	0.000	0.000	0.001	−0.071	−0.007	0.002	−3.13	238.29			−3.11	242.62
186	308	0.000	0.053	0.007	0.000	0.000	0.001	−0.071	−0.007	0.002	−2.44	239.70			−2.42	243.91
187	309	0.000	0.077	0.007	0.000	0.000	0.003	−0.103	−0.006	0.004	−1.73	242.92			−1.68	247.03
188	310	0.000	0.085	0.007	0.000	0.000	0.003	−0.114	−0.005	0.005	−0.95	244.62			−0.88	248.63
189	311	0.000	0.097	0.007	0.000	0.000	0.004	−0.130	−0.004	0.006	−0.59	247.68			−0.51	251.59
190	312	0.000	0.100	0.007	0.000	0.000	0.005	−0.134	−0.004	0.006	0.00	249.40			0.09	253.21
191	313	0.000	0.110	0.013	0.000	0.000	0.005	−0.147	−0.011	0.008	0.33	252.64			0.45	256.35
192	314	0.000	0.112	0.007	0.000	0.000	0.006	−0.151	−0.003	0.008	0.66	254.30			0.80	257.92
193	315	0.000	0.122	0.013	0.000	0.000	0.007	−0.164	−0.009	0.009	0.88	257.61			1.04	261.14
194	316	0.000	0.121	0.007	0.000	0.000	0.007	−0.163	−0.002	0.009	1.10	259.37			1.28	262.80
195	317	0.475		−0.020	0.019		0.531		0.134	0.018	−6.16	255.40			−5.62	259.07
196	318	0.483		−0.013	0.018		0.541		0.128	0.016	−6.13	257.14			−5.56	260.75
197	319	0.483		−0.007	0.016		0.542		0.121	0.014	−6.33	260.41			−5.80	263.88
198	320	0.483		0.000	0.014		0.543		0.112	0.011	−6.14	262.52			−5.58	265.91
199	321	0.483		0.007	0.012		0.543		0.103	0.008	−6.34	265.98			−5.82	269.22
200	322	0.300		0.027	0.004		0.331		0.007	−0.009	−2.38	272.03			−2.19	274.86
201	323	0.300		0.033	0.002		0.331		0.000	−0.009	−2.57	275.68			−2.38	278.40
202	324	0.300		0.027	0.005		0.331		0.007	−0.010	−2.56	277.98			−2.34	280.63
203	325	0.300		0.027	0.006		0.331		0.007	−0.011	−2.57	281.98			−2.35	284.53
204	326	0.300		0.027	0.002		0.331		0.007	−0.007	−2.24	284.78			−2.00	287.26
205	327	0.300		0.033	0.001		0.331		−0.001	−0.008	−2.10	289.11			−1.87	291.48
206	328	0.300		0.033	−0.001		0.331		−0.001	−0.006	−1.75	292.11			−1.49	294.42
207	329	0.300		0.047	−0.003		0.332		−0.018	−0.010	−1.75	296.46			−1.49	298.69
208	330	0.300		0.053	−0.006		0.333		−0.026	−0.009	−1.45	299.59			−1.15	301.76
209	331	0.300		0.067	−0.010		0.334		−0.043	−0.010	−1.54	304.03			−1.21	306.14
210	332	0.300		0.073	−0.012		0.335		−0.051	−0.010	−1.34	307.22			−0.97	309.30

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 122																
211	333	0.300		0.080	−0.014		0.335		−0.059	−0.011	−1.48	311.78			−1.08	313.80
212	334	0.300		0.080	−0.012		0.336		−0.059	−0.013	−1.27	315.15			−0.85	317.12
213	335	0.300		0.087	−0.017		0.336		−0.068	−0.010	−1.25	320.04			−0.79	321.95
214	336	0.175		−0.007	0.013		0.189		0.022	−0.010	−0.57	324.05			−0.42	325.57
215	337	0.167		−0.007	0.012		0.180		0.021	−0.010	−0.81	328.83			−0.68	330.25
216	338	0.158		−0.007	0.012		0.170		0.020	−0.010	−0.81	332.33			−0.68	333.67
217	339	0.150		0.000	0.005		0.161		0.010	−0.004	−0.96	337.36			−0.87	338.60
Z = 123																
174	297	−0.167		−0.013	−0.013		−0.173		0.026	0.009	−5.59	234.01			−5.62	240.25
175	298	−0.200		−0.027	−0.016		−0.205		0.047	0.008	−5.51	235.01			−5.54	241.09
176	299	−0.200		−0.027	−0.015		−0.205		0.047	0.007	−5.46	234.65			−5.49	240.60
177	300	−0.208		−0.033	−0.016		−0.213		0.055	0.006	−5.63	235.62			−5.66	241.41
178	301	0.367		0.027	0.011		0.408		0.029	−0.014	−6.15	234.93			−6.23	240.52
179	302	0.367		0.027	0.010		0.408		0.029	−0.013	−6.56	235.87			−6.65	241.32
180	303	0.375		0.033	0.016		0.418		0.026	−0.021	−6.69	235.79			−6.74	241.13
181	304	−0.008		0.013	0.001		−0.008		−0.015	−0.001	−5.29	238.76			−5.29	244.01
182	305	0.000		0.007	0.000		0.000		−0.008	0.000	−4.66	239.66			−4.66	244.78
183	306	0.000		0.007	0.000		0.000		−0.008	0.000	−4.39	241.72			−4.39	246.70
184	307	0.000	0.022	0.000	0.000	−0.001	0.000	−0.029	0.000	0.000	−3.62	242.97			−3.63	247.82
185	308	0.000	0.071	0.007	0.000	0.000	0.002	−0.095	−0.006	0.003	−2.63	245.96			−2.61	250.70
186	309	0.000	0.076	0.007	0.000	0.000	0.003	−0.102	−0.006	0.004	−1.98	247.31			−1.94	251.94
187	310	0.000	0.093	0.007	0.000	0.000	0.004	−0.125	−0.005	0.006	−1.44	250.04			−1.39	254.55
188	311	0.000	0.097	0.007	0.000	0.000	0.004	−0.130	−0.004	0.006	−0.80	251.60			−0.73	256.00
189	312	0.000	0.104	0.007	0.000	−0.001	0.005	−0.140	−0.004	0.007	−0.54	254.25			−0.46	258.54
190	313	0.000	0.108	0.007	0.000	0.000	0.005	−0.145	−0.003	0.007	−0.01	255.90			0.09	260.08
191	314	0.000	0.115	0.013	0.000	0.000	0.006	−0.154	−0.010	0.008	0.27	258.77			0.38	262.85
192	315	0.000	0.116	0.007	0.000	0.000	0.006	−0.156	−0.003	0.009	0.56	260.38			0.69	264.35
193	316	0.000	0.124	0.013	0.000	0.000	0.007	−0.167	−0.009	0.010	0.75	263.36			0.89	267.23
194	317	0.000	0.123	0.007	0.000	0.000	0.007	−0.166	−0.002	0.010	0.96	265.08			1.12	268.86
195	318	0.475		−0.020	0.018		0.531		0.133	0.019	−6.64	260.46			−6.20	264.41
196	319	0.475		−0.020	0.019		0.531		0.134	0.018	−6.48	262.33			−5.97	266.23
197	320	0.483		−0.007	0.016		0.542		0.121	0.014	−6.80	265.18			−6.36	268.91
198	321	0.483		0.000	0.013		0.543		0.111	0.012	−6.62	267.26			−6.15	270.90
199	322	0.483		0.007	0.012		0.543		0.103	0.008	−6.80	270.44			−6.37	273.93
200	323	0.308		0.033	0.004		0.341		0.002	−0.011	−2.85	276.47			−2.68	279.61
201	324	0.300		0.033	0.003		0.331		0.000	−0.010	−2.91	279.96			−2.74	282.98
202	325	0.300		0.027	0.006		0.331		0.007	−0.011	−2.91	282.23			−2.72	285.18
203	326	0.300		0.027	0.007		0.331		0.008	−0.012	−2.93	285.93			−2.74	288.78
204	327	0.300		0.027	0.004		0.331		0.007	−0.009	−2.58	288.73			−2.38	291.49
205	328	0.300		0.033	0.002		0.331		0.000	−0.009	−2.44	292.77			−2.24	295.43
206	329	0.300		0.033	0.001		0.331		−0.001	−0.008	−2.10	295.75			−1.87	298.33
207	330	0.300		0.040	0.000		0.332		−0.009	−0.010	−2.06	299.85			−1.84	302.34
208	331	0.300		0.047	−0.003		0.332		−0.018	−0.010	−1.75	302.97			−1.50	305.40
209	332	0.300		0.067	−0.010		0.334		−0.043	−0.010	−1.78	307.19			−1.49	309.56
210	333	0.300		0.073	−0.011		0.335		−0.050	−0.011	−1.57	310.38			−1.23	312.71
211	334	0.300		0.080	−0.014		0.335		−0.059	−0.011	−1.69	314.67			−1.33	316.93
212	335	0.300		0.080	−0.012		0.336		−0.059	−0.013	−1.51	318.00			−1.12	320.20
213	336	0.300		0.087	−0.016		0.336		−0.068	−0.011	−1.47	322.62			−1.05	324.77
214	337	0.183		−0.013	0.014		0.197		0.031	−0.010	−0.74	326.67			−0.58	328.48
215	338	0.175		−0.007	0.012		0.189		0.022	−0.009	−0.87	331.28			−0.74	332.97
216	339	0.167		−0.007	0.012		0.180		0.021	−0.010	−0.88	334.76			−0.75	336.37
Z = 124																
176	300	0.050		0.027	−0.013		0.053		−0.031	0.011	−4.62	242.74			−4.62	249.18
177	301	0.042		0.020	−0.008		0.045		−0.023	0.007	−4.94	243.53			−4.94	249.81
178	302	0.367		0.033	0.009		0.409		0.022	−0.014	−6.10	241.88			−6.19	247.92
179	303	0.367		0.033	0.009		0.409		0.022	−0.014	−6.53	242.78			−6.63	248.67

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 124																
180	304	0.375		0.040	0.014		0.419		0.017	−0.022	−6.66	242.39			−6.73	248.16
181	305	0.375		0.040	0.017		0.419		0.018	−0.025	−7.03	243.57			−7.10	249.20
182	306	0.000		0.007	0.000		0.000		−0.008	0.000	−3.68	246.88			−3.69	252.43
183	307	0.000		0.007	0.000		0.000		−0.008	0.000	−3.40	248.93			−3.40	254.33
184	308	0.000	0.047	0.000	0.000	−0.001	0.001	−0.063	0.001	0.001	−2.56	249.94			−2.55	255.22
185	309	0.000	0.080	0.007	0.000	0.000	0.003	−0.107	−0.006	0.004	−1.82	252.65			−1.79	257.82
186	310	0.000	0.091	0.007	0.000	0.000	0.004	−0.122	−0.005	0.005	−1.15	253.72			−1.09	258.77
187	311	0.000	0.100	0.007	0.000	0.000	0.005	−0.134	−0.004	0.006	−0.82	256.22			−0.75	261.16
188	312	0.000	0.103	0.007	0.000	0.000	0.005	−0.138	−0.004	0.007	−0.22	257.42			−0.14	262.24
189	313	0.000	0.111	0.007	0.000	−0.001	0.006	−0.149	−0.003	0.008	−0.03	259.99			0.06	264.70
190	314	0.000	0.114	0.007	0.000	0.000	0.006	−0.153	−0.003	0.008	0.46	261.29			0.57	265.88
191	315	0.000	0.122	0.013	0.000	0.000	0.007	−0.164	−0.009	0.009	0.68	264.09			0.81	268.58
192	316	0.000	0.122	0.007	0.000	0.000	0.007	−0.164	−0.002	0.010	0.92	265.34			1.07	269.72
193	317	0.375		0.067	0.008		0.422		−0.016	−0.029	−5.28	261.91			−5.16	266.15
194	318	0.475		−0.020	0.019		0.531		0.134	0.018	−6.67	261.74			−6.21	266.19
195	319	0.475		−0.020	0.020		0.531		0.134	0.017	−6.88	264.49			−6.43	268.82
196	320	0.483		−0.013	0.019		0.541		0.129	0.015	−6.86	265.93			−6.36	270.18
197	321	0.483		−0.007	0.017		0.542		0.121	0.013	−7.07	268.87			−6.62	272.96
198	322	0.483		0.000	0.014		0.543		0.112	0.011	−6.89	270.65			−6.41	274.66
199	323	0.483		0.007	0.012		0.543		0.103	0.008	−7.08	273.80			−6.65	277.65
200	324	0.483		0.007	0.012		0.543		0.103	0.008	−6.87	275.80			−6.38	279.61
201	325	0.300		0.033	0.006		0.331		0.000	−0.013	−2.99	283.21			−2.83	286.57
202	326	0.300		0.033	0.006		0.331		0.000	−0.013	−2.89	285.28			−2.70	288.57
203	327	0.300		0.027	0.010		0.331		0.008	−0.015	−3.00	288.88			−2.80	292.07
204	328	0.300		0.033	0.006		0.331		0.000	−0.013	−2.64	291.40			−2.43	294.50
205	329	0.300		0.033	0.005		0.331		0.000	−0.012	−2.53	295.40			−2.32	298.39
206	330	0.300		0.033	0.004		0.331		0.000	−0.011	−2.18	298.09			−1.95	301.00
207	331	0.300		0.047	0.001		0.333		−0.017	−0.013	−2.19	302.13			−1.96	304.95
208	332	0.300		0.053	−0.002		0.333		−0.025	−0.013	−1.86	304.98			−1.60	307.73
209	333	0.300		0.067	−0.007		0.334		−0.043	−0.013	−1.91	309.17			−1.62	311.84
210	334	0.300		0.073	−0.009		0.335		−0.050	−0.013	−1.70	312.07			−1.36	314.70
211	335	0.300		0.080	−0.012		0.336		−0.059	−0.013	−1.82	316.35			−1.47	318.90
212	336	0.300		0.080	−0.010		0.336		−0.059	−0.015	−1.66	319.38			−1.27	321.88
213	337	0.300		0.087	−0.014		0.336		−0.067	−0.013	−1.60	324.00			−1.19	326.43
214	338	−0.483		0.040	−0.015		−0.486		0.045	0.015	−1.78	326.86			−1.26	329.31
215	339	0.183		−0.007	0.012		0.198		0.024	−0.009	−0.77	332.59			−0.63	334.58
Z = 125																
178	303	0.375		0.040	0.014		0.419		0.017	−0.022	−6.61	250.56			−6.76	257.01
179	304	0.367		0.033	0.011		0.409		0.022	−0.016	−6.97	251.22			−7.11	257.52
180	305	0.375		0.040	0.017		0.419		0.018	−0.025	−7.17	250.73			−7.28	256.92
181	306	−0.008		0.007	0.000		−0.008		−0.008	0.000	−3.64	255.51			−3.64	261.65
182	307	0.000		0.007	0.000		0.000		−0.008	0.000	−2.96	256.12			−2.96	262.12
183	308	0.000	0.033	0.007	0.000	0.000	0.000	−0.044	−0.008	0.001	−2.59	257.95			−2.59	263.80
184	309	0.000	0.070	0.000	0.000	−0.001	0.002	−0.094	0.002	0.003	−1.74	258.95			−1.72	264.68
185	310	0.000	0.097	0.007	0.000	0.000	0.004	−0.130	−0.004	0.006	−1.15	261.21			−1.11	266.82
186	311	0.000		0.000	−0.001		0.000		0.000	0.001	−0.36	262.37			−0.36	267.80
187	312	0.000	0.108	0.007	0.000	0.000	0.005	−0.145	−0.003	0.007	−0.37	264.23			−0.31	269.58
188	313	0.000	0.110	0.000	0.000	−0.001	0.005	−0.148	0.005	0.008	0.10	265.28			0.18	270.52
189	314	0.000	0.115	0.000	0.000	−0.002	0.006	−0.155	0.005	0.009	0.24	267.49			0.32	272.60
190	315	0.000	0.119	0.000	0.000	−0.001	0.006	−0.161	0.006	0.009	0.68	268.73			0.78	273.72
191	316	0.000	0.125	0.007	0.000	0.000	0.007	−0.168	−0.002	0.010	0.79	271.11			0.90	275.98
192	317	0.000	0.127	0.000	0.000	−0.001	0.007	−0.172	0.006	0.011	1.09	272.40			1.23	277.18
193	318	0.375		0.067	0.010		0.423		−0.016	−0.031	−5.89	267.90			−5.81	272.49
194	319	0.475		−0.020	0.020		0.531		0.134	0.017	−7.19	267.79			−6.82	272.55
195	320	0.475		−0.020	0.020		0.531		0.134	0.017	−7.39	270.26			−7.03	274.88
196	321	0.475		−0.013	0.016		0.532		0.124	0.016	−7.26	271.78			−6.87	276.31
197	322	0.483		−0.007	0.016		0.542		0.121	0.014	−7.60	274.30			−7.24	278.68

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 125$																
198	323	0.483		0.000	0.013		0.543		0.111	0.012	−7.43	276.06			−7.03	280.35
199	324	0.483		0.007	0.012		0.543		0.103	0.008	−7.61	278.92			−7.26	283.06
200	325	0.483		0.007	0.012		0.543		0.103	0.008	−7.40	280.90			−6.99	284.99
201	326	0.300		0.033	0.008		0.331		0.001	−0.015	−3.35	288.19			−3.21	291.88
202	327	0.483		0.007	0.010		0.543		0.102	0.010	−7.09	286.41			−6.62	290.33
203	328	0.300		0.027	0.012		0.331		0.008	−0.017	−3.38	293.54			−3.21	297.04
204	329	0.300		0.033	0.008		0.331		0.001	−0.015	−3.02	296.05			−2.83	299.46
205	330	0.300		0.033	0.007		0.331		0.000	−0.014	−2.89	299.76			−2.71	303.06
206	331	0.308		0.040	0.006		0.341		−0.006	−0.016	−2.62	302.36			−2.41	305.59
207	332	0.300		0.047	0.003		0.333		−0.017	−0.015	−2.55	306.20			−2.35	309.32
208	333	0.308		0.053	0.001		0.342		−0.022	−0.016	−2.32	308.94			−2.07	312.00
209	334	0.300		0.067	−0.006		0.334		−0.042	−0.014	−2.25	312.95			−2.00	315.92
210	335	0.300		0.073	−0.008		0.335		−0.050	−0.014	−2.02	315.87			−1.72	318.77
211	336	0.300		0.080	−0.010		0.336		−0.059	−0.015	−2.11	319.89			−1.79	322.72
212	337	0.300		0.080	−0.009		0.336		−0.058	−0.016	−1.95	322.90			−1.60	325.67
213	338	0.300		0.080	−0.011		0.336		−0.059	−0.014	−1.91	327.21			−1.57	329.88
214	339	−0.483		0.033	−0.015		−0.486		0.052	0.012	−1.90	330.26			−1.45	332.94
$Z = 126$																
180	306	0.375		0.040	0.017		0.419		0.018	−0.025	−7.21	257.99			−7.33	264.64
181	307	0.375		0.040	0.019		0.419		0.018	−0.027	−7.58	258.83			−7.70	265.33
182	308	0.000	0.053	0.007	0.000	0.000	0.001	−0.071	−0.007	0.002	−1.91	264.13			−1.90	270.60
183	309	0.000	0.068	0.007	0.000	0.000	0.002	−0.091	−0.006	0.003	−1.57	265.90			−1.56	272.23
184	310	0.000		0.000	−0.001		0.000		0.000	0.001	−1.01	266.31			−1.02	272.47
185	311	0.000	0.100	0.007	0.000	0.000	0.005	−0.134	−0.004	0.006	−0.54	268.43			−0.50	274.49
186	312	0.000	0.100	0.000	0.000	−0.001	0.005	−0.135	0.004	0.006	−0.14	268.89			−0.08	274.82
187	313	0.000	0.111	0.007	0.000	0.000	0.006	−0.149	−0.003	0.008	0.16	271.04			0.23	276.84
188	314	0.000	0.114	0.007	0.000	0.000	0.006	−0.153	−0.003	0.008	0.68	271.83			0.76	277.51
189	315	0.000	0.119	0.007	0.000	0.000	0.006	−0.160	−0.002	0.009	0.76	273.97			0.85	279.52
190	316	0.000	0.123	0.007	0.000	0.000	0.007	−0.166	−0.002	0.010	1.18	274.88			1.29	280.31
191	317	0.000	0.127	0.007	0.000	0.000	0.007	−0.171	−0.002	0.010	1.21	277.17			1.33	282.47
192	318	0.000	0.130	0.007	0.000	0.000	0.008	−0.175	−0.001	0.011	1.52	278.17			1.66	283.36
193	319	0.383		0.073	0.008		0.433		−0.020	−0.032	−6.14	272.96			−6.07	277.95
194	320	0.383		0.073	0.006		0.433		−0.021	−0.030	−5.60	274.40			−5.49	279.30
195	321	0.475		−0.020	0.021		0.531		0.134	0.016	−7.66	274.99			−7.30	280.01
196	322	0.483		−0.013	0.021		0.541		0.129	0.013	−7.67	276.08			−7.26	281.02
197	323	0.483		−0.007	0.017		0.542		0.121	0.013	−7.91	278.67			−7.55	283.45
198	324	0.483		0.000	0.014		0.543		0.112	0.011	−7.76	280.11			−7.36	284.80
199	325	0.483		0.007	0.012		0.543		0.103	0.008	−7.96	282.94			−7.61	287.46
200	326	0.483		0.007	0.012		0.543		0.103	0.008	−7.75	284.63			−7.34	289.09
201	327	0.300		0.033	0.009		0.331		0.001	−0.016	−3.44	292.15			−3.30	296.23
202	328	0.300		0.033	0.009		0.331		0.001	−0.016	−3.35	293.92			−3.18	297.90
203	329	0.300		0.033	0.011		0.332		0.001	−0.018	−3.44	297.23			−3.27	301.10
204	330	0.300		0.033	0.009		0.331		0.001	−0.016	−3.11	299.42			−2.92	303.20
205	331	0.300		0.040	0.006		0.332		−0.008	−0.016	−2.99	303.11			−2.81	306.77
206	332	0.300		0.040	0.006		0.332		−0.008	−0.016	−2.66	305.47			−2.46	309.05
207	333	0.300		0.047	0.004		0.333		−0.017	−0.016	−2.66	309.23			−2.46	312.70
208	334	0.300		0.060	−0.002		0.334		−0.033	−0.015	−2.29	311.83			−2.04	315.22
209	335	0.300		0.067	−0.005		0.334		−0.042	−0.015	−2.40	315.64			−2.15	318.94
210	336	0.300		0.073	−0.007		0.335		−0.050	−0.015	−2.17	318.26			−1.88	321.50
211	337	0.300		0.080	−0.009		0.336		−0.058	−0.016	−2.28	322.26			−1.97	325.41
212	338	0.300		0.080	−0.008		0.336		−0.058	−0.017	−2.11	325.00			−1.76	328.09
213	339	0.300		0.087	−0.013		0.336		−0.067	−0.014	−2.03	329.34			−1.67	332.35
$Z = 127$																
183	310	0.000	0.094	0.007	0.000	0.000	0.004	−0.126	−0.005	0.006	−0.75	275.64			−0.73	282.45
184	311	0.000	0.101	0.007	0.000	0.000	0.005	−0.136	−0.004	0.007	−0.26	275.96			−0.23	282.63
185	312	0.000	0.108	0.013	0.000	0.000	0.005	−0.145	−0.011	0.007	0.06	277.61			0.09	284.13

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 127$																
186	313	0.000	0.111	0.007	0.000	0.000	0.006	−0.149	−0.003	0.008	0.38	277.98			0.43	284.37
187	314	0.000	0.119	0.013	0.000	0.000	0.006	−0.160	−0.010	0.009	0.65	279.79			0.70	286.04
188	315	0.000	0.120	0.007	0.000	0.000	0.007	−0.162	−0.002	0.009	0.99	280.39			1.06	286.51
189	316	0.000	0.127	0.013	0.000	−0.001	0.007	−0.171	−0.009	0.010	1.16	282.32			1.24	288.30
190	317	0.000	0.131	0.013	0.000	0.000	0.008	−0.176	−0.008	0.011	1.54	283.17			1.65	289.03
191	318	0.392		0.080	0.013		0.445		−0.024	−0.040	−7.44	276.14			−7.45	281.75
192	319	0.383		0.073	0.013		0.433		−0.019	−0.036	−7.01	277.25			−6.97	282.76
193	320	0.383		0.080	0.005		0.434		−0.029	−0.032	−6.71	279.70			−6.70	285.06
194	321	0.383		0.080	0.004		0.434		−0.029	−0.031	−6.16	281.12			−6.11	286.39
195	322	0.475		−0.020	0.021		0.531		0.134	0.016	−8.18	281.46			−7.90	286.82
196	323	0.483		−0.013	0.021		0.541		0.129	0.013	−8.21	282.50			−7.89	287.77
197	324	0.483		−0.007	0.018		0.542		0.121	0.012	−8.44	284.81			−8.17	289.91
198	325	0.483		0.000	0.014		0.543		0.112	0.011	−8.29	286.24			−7.98	291.25
199	326	0.483		0.007	0.012		0.543		0.103	0.008	−8.46	288.80			−8.20	293.64
200	327	0.483		0.007	0.012		0.543		0.103	0.008	−8.27	290.46			−7.94	295.24
201	328	0.483		0.007	0.011		0.543		0.102	0.009	−8.31	293.35			−7.99	297.99
202	329	0.483		0.007	0.010		0.543		0.102	0.010	−7.94	295.36			−7.56	299.95
203	330	0.300		0.033	0.012		0.332		0.001	−0.019	−3.81	302.60			−3.67	306.82
204	331	0.300		0.033	0.011		0.332		0.001	−0.018	−3.48	304.77			−3.32	308.90
205	332	0.300		0.040	0.007		0.332		−0.008	−0.017	−3.37	308.17			−3.22	312.17
206	333	0.308		0.047	0.005		0.342		−0.015	−0.017	−3.04	310.52			−2.86	314.45
207	334	0.300		0.053	0.002		0.333		−0.024	−0.017	−3.01	314.02			−2.83	317.83
208	335	0.308		0.060	0.000		0.343		−0.031	−0.017	−2.78	316.46			−2.56	320.19
209	336	0.308		0.073	−0.005		0.344		−0.047	−0.017	−2.83	320.05			−2.59	323.69
210	337	0.308		0.080	−0.008		0.345		−0.056	−0.017	−2.61	322.65			−2.33	326.23
211	338	0.300		0.080	−0.009		0.336		−0.058	−0.016	−2.65	326.43			−2.38	329.89
212	339	0.300		0.080	−0.006		0.336		−0.058	−0.018	−2.48	329.15			−2.18	332.54
$Z = 128$																
185	313	0.000	0.108	0.007	0.000	0.000	0.005	−0.145	−0.003	0.007	0.50	285.38			0.54	292.39
186	314	0.000	0.113	0.007	0.000	0.000	0.006	−0.152	−0.003	0.008	0.94	285.56			1.00	292.43
187	315	0.000	0.118	0.007	0.000	0.000	0.006	−0.159	−0.003	0.009	1.05	287.19			1.11	293.91
188	316	0.000	0.122	0.007	0.000	0.000	0.007	−0.164	−0.002	0.010	1.52	287.61			1.59	294.20
189	317	0.000	0.127	0.007	0.000	0.000	0.007	−0.171	−0.002	0.010	1.52	289.35			1.60	295.80
190	318	0.000	0.130	0.007	0.000	0.000	0.008	−0.175	−0.001	0.011	1.89	289.89			2.00	296.21
191	319	0.392		0.080	0.013		0.445		−0.024	−0.040	−7.56	282.37			−7.58	288.42
192	320	0.392		0.080	0.011		0.445		−0.024	−0.038	−7.07	283.24			−7.04	289.19
193	321	0.383		0.080	0.007		0.434		−0.029	−0.034	−6.83	285.61			−6.82	291.41
194	322	0.383		0.080	0.006		0.434		−0.029	−0.033	−6.27	286.75			−6.22	292.45
195	323	0.375		0.080	0.001		0.424		−0.033	−0.028	−5.86	289.49			−5.83	295.04
196	324	0.483		−0.007	0.018		0.542		0.121	0.012	−8.53	287.60			−8.24	293.27
197	325	0.483		−0.007	0.019		0.542		0.121	0.011	−8.76	289.89			−8.49	295.42
198	326	0.483		0.000	0.015		0.543		0.112	0.010	−8.65	290.99			−8.34	296.41
199	327	0.483		0.007	0.012		0.543		0.103	0.008	−8.87	293.48			−8.60	298.73
200	328	0.483		0.007	0.012		0.543		0.103	0.008	−8.66	294.86			−8.33	300.05
201	329	0.483		0.007	0.012		0.543		0.103	0.008	−8.71	297.73			−8.39	302.77
202	330	0.483		0.007	0.011		0.543		0.102	0.009	−8.34	299.45			−7.96	304.44
203	331	0.300		0.040	0.010		0.332		−0.008	−0.020	−3.79	307.10			−3.65	311.71
204	332	0.300		0.040	0.009		0.332		−0.008	−0.019	−3.49	308.94			−3.34	313.46
205	333	0.300		0.040	0.008		0.332		−0.008	−0.018	−3.45	312.25			−3.30	316.64
206	334	0.300		0.047	0.005		0.333		−0.017	−0.017	−3.10	314.35			−2.92	318.64
207	335	0.300		0.053	0.003		0.333		−0.024	−0.018	−3.14	317.76			−2.96	321.94
208	336	0.300		0.060	0.000		0.334		−0.033	−0.017	−2.83	319.98			−2.62	324.08
209	337	0.300		0.073	−0.006		0.335		−0.050	−0.016	−2.85	323.59			−2.63	327.58
210	338	0.300		0.080	−0.008		0.336		−0.058	−0.017	−2.61	325.92			−2.34	329.86
211	339	0.300		0.080	−0.008		0.336		−0.058	−0.017	−2.85	329.49			−2.58	333.31

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
$Z = 129$																
187	316	0.000	0.126	0.013	0.000	0.000	0.007	−0.169	−0.009	0.010	1.43	296.53			1.47	303.73
188	317	0.000	0.127	0.007	0.000	0.000	0.007	−0.171	−0.002	0.010	1.74	296.78			1.80	303.84
189	318	0.392		0.080	0.020		0.445		−0.022	−0.046	−8.34	288.14			−8.44	294.88
190	319	0.392		0.080	0.017		0.445		−0.023	−0.043	−8.06	288.56			−8.12	295.19
191	320	0.392		0.087	0.011		0.446		−0.032	−0.041	−7.87	290.39			−7.96	296.84
192	321	0.392		0.087	0.009		0.446		−0.033	−0.039	−7.38	291.23			−7.42	297.58
193	322	0.383		0.087	0.004		0.435		−0.037	−0.034	−7.19	293.26			−7.24	299.45
194	323	0.383		0.087	0.003		0.435		−0.038	−0.033	−6.65	294.35			−6.67	300.44
195	324	0.375		0.087	−0.002		0.425		−0.042	−0.029	−6.28	296.77			−6.31	302.70
196	325	0.483		−0.007	0.019		0.542		0.121	0.011	−9.10	294.70			−8.91	300.72
197	326	0.483		0.000	0.015		0.543		0.112	0.010	−9.36	296.68			−9.20	302.52
198	327	0.483		0.000	0.016		0.543		0.112	0.009	−9.23	297.77			−9.01	303.54
199	328	0.483		0.007	0.012		0.543		0.103	0.008	−9.45	299.97			−9.27	305.57
200	329	0.483		0.007	0.013		0.543		0.103	0.007	−9.26	301.32			−9.01	306.85
201	330	0.483		0.007	0.012		0.543		0.103	0.008	−9.29	303.90			−9.06	309.29
202	331	0.483		0.007	0.011		0.543		0.102	0.009	−8.93	305.61			−8.63	310.92
203	332	0.300		0.040	0.011		0.332		−0.007	−0.021	−4.16	313.17			−4.06	318.17
204	333	0.300		0.040	0.010		0.332		−0.008	−0.020	−3.88	315.00			−3.75	319.89
205	334	0.300		0.040	0.010		0.332		−0.008	−0.020	−3.83	318.02			−3.71	322.79
206	335	0.300		0.047	0.007		0.333		−0.016	−0.019	−3.48	320.10			−3.34	324.76
207	336	0.300		0.060	0.001		0.334		−0.033	−0.018	−3.44	323.31			−3.29	327.85
208	337	0.358		0.113	−0.023		0.407		−0.083	−0.019	−3.05	325.60			−2.77	330.16
209	338	0.350		0.113	−0.023		0.398		−0.085	−0.019	−2.91	329.08			−2.62	333.52
210	339	0.308		0.080	−0.006		0.345		−0.056	−0.019	−3.21	330.86			−2.98	335.14
$Z = 130$																
189	319	0.000	0.134	0.007	0.000	0.000	0.008	−0.181	−0.001	0.012	2.10	305.95			2.16	313.35
190	320	0.000	0.136	0.007	0.000	0.000	0.008	−0.184	−0.001	0.012	2.42	306.12			2.51	313.39
191	321	0.400		0.093	0.005		0.456		−0.038	−0.039	−7.71	297.60			−7.83	304.51
192	322	0.392		0.093	0.004		0.446		−0.041	−0.037	−7.32	298.05			−7.38	304.86
193	323	0.392		0.093	0.000		0.446		−0.042	−0.034	−7.07	300.12			−7.15	306.76
194	324	0.383		0.093	−0.002		0.435		−0.046	−0.032	−6.61	300.84			−6.64	307.38
195	325	0.483		−0.007	0.021		0.542		0.121	0.009	−9.49	299.98			−9.36	306.53
196	326	0.483		−0.007	0.020		0.542		0.121	0.010	−9.41	300.52			−9.22	307.00
197	327	0.483		0.000	0.016		0.543		0.112	0.009	−9.68	302.47			−9.53	308.76
198	328	0.483		0.000	0.017		0.543		0.112	0.008	−9.55	303.27			−9.33	309.48
199	329	0.483		0.007	0.013		0.543		0.103	0.007	−9.76	305.46			−9.58	311.50
200	330	0.483		0.007	0.014		0.543		0.103	0.006	−9.57	306.52			−9.32	312.48
201	331	0.300		0.040	0.010		0.332		−0.008	−0.020	−4.22	314.46			−4.14	320.12
202	332	0.483		0.007	0.013		0.543		0.103	0.007	−9.24	310.49			−8.94	316.24
203	333	0.300		0.040	0.011		0.332		−0.007	−0.021	−4.26	318.26			−4.16	323.68
204	334	0.300		0.040	0.010		0.332		−0.008	−0.020	−3.96	319.80			−3.84	325.11
205	335	0.300		0.047	0.007		0.333		−0.016	−0.019	−3.90	322.84			−3.78	328.01
206	336	0.300		0.053	0.004		0.333		−0.024	−0.019	−3.56	324.61			−3.41	329.68
207	337	0.367		0.133	−0.036		0.420		−0.106	−0.017	−3.69	327.63			−3.39	332.73
208	338	0.358		0.120	−0.028		0.408		−0.092	−0.018	−3.40	329.54			−3.10	334.52
209	339	0.350		0.120	−0.027		0.399		−0.094	−0.018	−3.19	333.08			−2.88	337.93
$Z = 131$																
192	323	0.392		0.093	0.003		0.446		−0.041	−0.036	−7.70	306.67			−7.83	313.90
193	324	0.392		0.100	−0.004		0.447		−0.051	−0.033	−7.39	308.50			−7.54	315.56
194	325	0.392		0.100	−0.006		0.447		−0.052	−0.032	−6.89	309.25			−6.99	316.20
195	326	0.483		−0.007	0.022		0.542		0.122	0.008	−10.07	307.78			−10.04	314.73
196	327	0.483		0.000	0.016		0.543		0.112	0.009	−9.99	308.31			−9.92	315.14
197	328	0.483		0.000	0.017		0.543		0.112	0.008	−10.27	309.96			−10.20	316.63
198	329	0.483		0.000	0.017		0.543		0.112	0.008	−10.15	310.72			−10.02	317.32
199	330	0.483		0.007	0.014		0.543		0.103	0.006	−10.36	312.63			−10.27	319.03
200	331	0.483		0.007	0.014		0.543		0.103	0.006	−10.18	313.65			−10.03	319.98

TABLE. Calculated Nuclear Ground-State Masses and Deformations, Compared to Experimental Masses Where Available

See page 221 for Explanation of Table

N	A	ϵ_2	ϵ_3	ϵ_4	ϵ_6	ϵ_6^{sym}	β_2	β_3	β_4	β_6	E_{mic} (MeV)	M_{th} (MeV)	M_{exp} (MeV)	σ_{exp} (MeV)	E_{mic}^{FL} (MeV)	M_{th}^{FL} (MeV)
Z = 131																
201	332	0.483		0.007	0.013		0.543		0.103	0.007	−10.21	315.93			−10.06	322.11
202	333	0.483		0.007	0.014		0.543		0.103	0.006	−9.87	317.31			−9.66	323.42
203	334	0.300		0.040	0.012		0.332		−0.007	−0.022	−4.64	325.03			−4.57	330.86
204	335	0.300		0.047	0.008		0.333		−0.016	−0.020	−4.26	326.64			−4.18	332.35
205	336	0.300		0.047	0.007		0.333		−0.016	−0.019	−4.29	329.30			−4.21	334.87
206	337	0.375		0.133	−0.037		0.430		−0.104	−0.017	−4.38	330.62			−4.17	336.20
207	338	0.367		0.133	−0.036		0.420		−0.106	−0.017	−4.30	333.57			−4.08	339.02
208	339	0.367		0.127	−0.032		0.420		−0.098	−0.018	−3.95	335.52			−3.70	340.87
Z = 132																
194	326	0.392		0.107	−0.010		0.448		−0.061	−0.031	−6.79	316.48			−6.91	323.92
195	327	0.483		−0.007	0.024		0.542		0.122	0.006	−10.39	314.59			−10.36	322.02
196	328	0.483		0.000	0.018		0.543		0.112	0.007	−10.30	314.83			−10.23	322.15
197	329	0.483		0.000	0.018		0.543		0.112	0.007	−10.58	316.45			−10.52	323.61
198	330	0.483		0.000	0.019		0.542		0.112	0.006	−10.46	316.93			−10.33	324.00
199	331	0.483		0.007	0.015		0.543		0.103	0.005	−10.68	318.81			−10.60	325.69
200	332	0.483		0.007	0.015		0.543		0.103	0.005	−10.50	319.54			−10.35	326.34
201	333	0.300		0.040	0.011		0.332		−0.007	−0.021	−4.70	327.64			−4.66	334.18
202	334	0.300		0.040	0.011		0.332		−0.007	−0.021	−4.60	328.48			−4.53	334.91
203	335	0.292		0.040	0.011		0.323		−0.010	−0.021	−4.80	330.77			−4.73	337.04
204	336	0.300		0.047	0.008		0.333		−0.016	−0.020	−4.38	332.12			−4.29	338.29
205	337	0.300		0.053	0.005		0.333		−0.024	−0.019	−4.36	334.81			−4.28	340.83
206	338	0.300		0.060	0.002		0.334		−0.033	−0.019	−4.03	336.27			−3.92	342.18
207	339	0.367		0.140	−0.040		0.421		−0.115	−0.016	−4.55	338.59			−4.32	344.50
Z = 133																
196	329	0.483		0.000	0.019		0.542		0.112	0.006	−10.92	323.27			−10.94	331.01
197	330	0.483		0.000	0.019		0.542		0.112	0.006	−11.19	324.61			−11.22	332.18
198	331	0.483		0.000	0.020		0.542		0.113	0.005	−11.08	325.06			−11.04	332.54
199	332	0.483		0.007	0.016		0.543		0.103	0.005	−11.30	326.65			−11.30	333.93
200	333	0.392		0.127	−0.029		0.450		−0.089	−0.023	−5.68	332.80			−5.73	339.88
201	334	0.300		0.040	0.013		0.332		−0.007	−0.023	−5.08	335.40			−5.07	342.39
202	335	0.300		0.047	0.009		0.333		−0.016	−0.021	−4.87	336.34			−4.85	343.20
203	336	0.292		0.040	0.012		0.323		−0.009	−0.022	−5.20	338.20			−5.18	344.92
204	337	0.292		0.040	0.011		0.323		−0.010	−0.021	−4.92	339.41			−4.87	346.01
205	338	0.300		0.053	0.006		0.333		−0.024	−0.020	−4.78	341.93			−4.74	348.37
206	339	0.383		0.147	−0.046		0.441		−0.119	−0.016	−5.26	342.57			−5.09	348.99
Z = 134																
198	332	0.392		0.127	−0.027		0.450		−0.088	−0.025	−6.14	337.21			−6.26	345.05
199	333	0.392		0.133	−0.032		0.451		−0.096	−0.023	−6.06	339.08			−6.18	346.76
200	334	0.392		0.133	−0.033		0.450		−0.097	−0.022	−5.81	339.57			−5.88	347.15
201	335	0.300		0.040	0.013		0.332		−0.007	−0.023	−5.17	342.19			−5.17	349.68
202	336	0.292		0.040	0.012		0.323		−0.009	−0.022	−5.15	342.65			−5.12	350.02
203	337	0.292		0.040	0.013		0.323		−0.009	−0.023	−5.34	344.65			−5.31	351.86
204	338	0.283		0.040	0.011		0.313		−0.012	−0.021	−5.10	345.52			−5.05	352.60
205	339	0.283		0.040	0.010		0.313		−0.012	−0.020	−5.12	347.87			−5.07	354.79
Z = 135																
201	336	0.292		0.040	0.013		0.323		−0.009	−0.023	−5.61	350.58			−5.64	358.56
202	337	0.292		0.040	0.013		0.323		−0.009	−0.023	−5.59	351.04			−5.59	358.87
203	338	0.283		0.040	0.013		0.313		−0.012	−0.022	−5.84	352.67			−5.84	360.35
204	339	0.283		0.040	0.012		0.313		−0.012	−0.022	−5.59	353.55			−5.57	361.09
Z = 136																
203	339	0.275		0.033	0.015		0.303		−0.005	−0.022	−6.12	359.66			−6.12	367.86