● PROTON FORM FACTOR FROM 0.15 TO 0.79 fm^{-2}. J. J. Murphy, II, Y. M. Shin, and D. M. Skopik, Saskatchewan Accelerator Laboratory, University of Saskatchewan, Saskatoon, Canada S7N 0W0 (Received 7 January 1974).

The absolute electron-proton elastic scattering cross section has been measured by detecting the recoil protons. The proton charge form factor has been extracted for values of the square of the momentum transfer between 0.15 and 0.79 fm^{-2}. The rms charge radius determined from these measurements is 0.81 ± 0.04 fm.

(C, June)

● PRODUCTION OF Li AND B IN PROTON AND AL-PHA-PARTICLE REACTIONS ON ^{14}N AT LOW ENERGIES. W. W. Jacobs,* D. Bodansky, D. Chamberlin, and D. L. Oberg, Department of Physics, University of Washington, Seattle, Washington 98195 (Received 28 January 1974).

Cross sections have been measured for the production of ^{7}Li and ^{11}B from the reactions ^{14}N$(p, 2\alpha)^7$Be and ^{14}N$(p, \alpha)^{11}$C from near threshold to 24 and 22 MeV, re-

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THE COULOMB BARRIER. E. Friedman, D. Nir, D. Suraqui, and Y. Tuchman, Racah Institute of Physics, Hebrew University, Jerusalem, Israel (Received 26 December 1973).

The reaction ^{208}Pb$(p, d)^{207}$Pb to the $3p_{1/2}$, $2f_{5/2}$, and $3p_{3/2}$ single-hole states was studied at energies below the Coulomb barrier. The reaction ^{48}Ca$(d, t)^{47}$Ca to the $1f_{7/2}$ single-hole state was studied near the Coulomb barrier. Distorted-wave Born-approximation analyses provided values for the root-mean-square radii of the orbitals of the picked-up neutrons. These values are in agreement with results obtained from other reactions and from nuclear-structure calculations, but disagree with values based on analyses of Coulomb displacement energies.

(C, June)

● EXCITATION FUNCTIONS FOR (p, n) REACTIONS ON ^{79}Br AND ^{127}I. R. Collé and R. Kishore, Chemistry Department, Brookhaven National Laboratory, Upton, New York 11973 (Received 17 January 1974).

Excitation functions for the reactions ^{79}Br$(p, n)^{79}$Kr and ^{127}I$(p, n)^{127}$Xe have been determined from 3 to 25 MeV by the activation method. KBr and KI targets of

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natural isotopic abundances were encapsulated in Mylar to prevent escape of the gaseous ^{79}Kr and ^{127}Xe. Disintegration rates were obtained by assaying selected γ rays with calibrated Ge(Li) detectors; beam intensities were determined with a Faraday cup. The measured absolute cross sections have uncertainties of less than 10% with energy uncertainties of $\lesssim 100$ keV. The excitation functions are compared to Monte Carlo calculations based on an intranuclear-cascade statistical-evaporation model.

(C, June)

● EFFECT OF DEUTERON BREAKUP ON ELASTIC DEUTERON-NUCLEUS SCATTERING. George H. Rawitscher,* Center for Theoretical Physics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, and Department of Physics, University of Surrey, Guildford, Surrey, England (Received 1 October 1973; revised manuscript received 4 March 1974).

The properties of the transition matrix elements $V_{ab}(R)$ of the breakup potential V_N taken between states $\phi_a(\vec{r})$ and $\phi_b(\vec{r})$ are examined. Here $\phi_a(\vec{r})$ are eigenstates of the neutron-proton relative-motion Hamiltonian, and the eigenvalues of the energy ϵ_a are positive (continuum states) or negative (bound deuteron); $V_N(\vec{r}, \vec{R})$ is the sum of the phenomenological proton nucleus $V_{p-A}(|\vec{R} - \frac{1}{2}\vec{r}|)$ and neutron nucleus $V_{n-A}(|\vec{R} + \frac{1}{2}\vec{r}|)$ optical potentials evaluated for nucleon energies equal to half the incident deuteron energy. The bound-to-con-

protons and α particles were measured between 30° and 150°. The extent of isospin mixing between the $T_>$ and $T_<$ states of the compound nucleus was determined by comparison of the quantity $\sigma(p, p')\sigma(\alpha, \alpha')/\sigma(p, \alpha)\sigma(\alpha, p)$ with theory and the fractional mixing was found to increase from 0 to 0.3 over the above energy range. The mixing width shows a corresponding increase from 0.2 to 16 keV. The independence hypothesis was verified at all energies by measurements of the α and np exit channels. The various spectra were compared with the spin-dependent statistical theory. It was not possible to fit the data for various energies with energy-independent parameters in the Fermi gas model level density expression suggesting that this expression is inadequate.

(C, June)

● $E_p = 1.118$-MeV RESONANCE IN THE ^{27}Al$(p, \gamma)^{28}$Si REACTION. J. Dalmas, F. Leccia, and M. M. Aléonard, Centre d'Etudes Nucléaires de Bordeaux-Gradignan, 33170 Gradignan, France (Received 14 January 1974).

The 12.664-MeV level in ^{28}Si has been populated by resonant proton capture at 1.118 MeV in the reaction ^{27}Al$(p, \gamma)^{28}$Si. γ-ray angular distributions have been measured with a 80-cm^3 Ge(Li) detector. The spin of the 11.432-MeV level is most probably 4 with $T = 0$; for the 8.413-MeV level, the assignment $J^\pi = 4^-$ is in