Adopted Levels, Gammas

$Q(\beta^-)$=15753 *10*; S(n)=859.8 *87*; S(p)=2.344×10^4 *60*; $Q(\alpha)$=-1.808×10^4 *27*

$Q(\beta^-)$,S(n),S(p),$Q(\alpha)$: Deduced by the evaluator using mass excesses of 15529.5 *71* for ^{35}Mg measured by 2025Ly01, and 8318 *5* for ^{34}Mg: a weighted average of 8323 *7* (2019As04) and 8315 *5* (2025Ly01); −224 *7* for ^{35}Al, 31680 *600* for ^{34}Na, and 31180 *270* for ^{31}Ne from 2021Wa16. Values from 2021Wa16: $Q(\beta^-)$=15860 *270*, S(n)=750 *270*, S(p)=23330 *660*, $Q(\alpha)$=−17970 *380*.

S(2n)=5576.0 *76*, $Q(\beta^-n)$=10455.8 *74*, from mass excesses of 15529.5 *71* for ^{35}Mg measured by 2025Ly01; 4962.9 *27* for ^{33}Mg and −2997.6 *21* for ^{34}Al from 2021Wa16. Values from 2021Wa16: S(2n)=5470 *270*, $Q(\beta^-n)$=10570 *270*.

S(2p)=45070 *660* (syst) (2021Wa16).

Isotope discovery (2012Th10): Ta(^{48}Ca,X) projectile fragmentation at GANIL (1989Gu03,1991Or01).

1999YoZW: ^{35}Mg produced by ^{9}Be(^{48}Ca,X) and ^{181}Ta(^{48}Ca,X) fragmentations at E(^{48}Ca)=70 MeV/nucleon at RIKEN. Measured $T_{1/2}$ and delayed neutron emission probabilities.

2006Kh08: ^{35}Mg produced by ^{181}Ta(^{48}Ca,X) fragmentation at E(^{48}Ca)=60.3 MeV/nucleon at GANIL. Measured energy-integrated reaction cross sections at 30-65 MeV/nucleon using a silicon telescope as both active target and detector. Deduced radii, isospin dependence, and possible halo structure or large deformation.

2007Ts09: Analyzed fragmentation cross sections of ^{48}Ca beam on ^{9}Be and ^{181}Ta targets.

2011Ka01: ^{35}Mg produced by ^{9}Be(^{48}Ca,X) fragmentation at GSI. Measured interaction cross sections with C and CH_2 targets at 900 MeV/nucleon. Deduced rms matter radii.

2011FuZZ: ^{35}Mg produced by ^{9}Be(^{48}Ca,X) fragmentation at 345 MeV/nucleon. Measured thick target fragmentation and deduced production cross sections.

2012Kw02: ^{35}Mg produced by ^{9}Be,^{nat}Ni,^{181}Ta(^{40}Ar,X) at E(^{40}Ar)=140 MeV/nucleon at NSCL. Measured fission fragment spectra, average isobaric velocities, parallel momentum transfers, widths, fragment σ. Comparison with empirical formula EPAX, and predictions from internuclear cascade and deep inelastic models using Monte Carlo ISABEL-GEMINI and DIT-GEMINI codes.

2013StZY: ^{35}Mg produced by ^{9}Be(^{48}Ca,X) fragmentation at E(^{48}Ca)=345 MeV/nucleon at RIKEN. Measured $T_{1/2}$ and delayed γ rays.

Mass measurements: 2025Ly01, 2007Ju03, 2001Sa72, 2000Sa21, 1998SaZL, 1991Or01.

Theoretical calculations (binding energies, deformation, quadrupole moments, radii, levels, J, π, mass, $T_{1/2}$, etc): 2023Ra22, 2021Ka07, 2020Mi15, 2016Ba59, 2016Sa46, 2016Sh05, 2015Sh21, 2014Ga13, 2014Wa14, 2013Ch31, 2013Li39, 2013Sh05, 2012Fo27, 2012Ho19, 2007Ha53, 2006Zh19, 2005Ch71, 2004Kh16, 1996Re10, 1991Pa19, 1991Pa21.

^{35}Mg Levels

Cross Reference (XREF) Flags

A	^{35}Na β^- decay (2.1 ms)
B	^{9}Be(^{38}Si,^{35}Mgγ)
C	C(^{36}Mg,^{35}Mgγ),(^{37}Al,^{35}Mgγ)

E(level)†	J$^\pi$	$T_{1/2}$	XREF	Comments
0	(3/2$^-$,5/2$^-$)	11.3 ms *6*	BC	%β^-=100; %β^-n=52 *46*; %β^-2n=? %β^-n: From 2015Bi05 evaluation; originally from 2008ReZZ. Other: 52 *11* (1999YoZW, preliminary). Theoretical %β^-0n=29, %β^-1n=66, %β^-2n=5 (2021Mi17). Theoretical %β^-0n=65, %β^-1n=32, %β^-2n=3 (2019Mo01). J$^\pi$: 3/2$^-$ from shell−model calculations with the SDPF−M and SDPF−M+2p$_{1/2}$ interactions (2017Mo26). Near degenerate 30-keV 3/2$^-$ and 5/2$^-$ g.s. from Monte Carlo shell-model calculations with the SDPF-M interaction (2011Ga15), and 3/2$^-$ g.s. from shell-model calculations with the SDPF-U interaction (2011Ga15). 3/2$^-$ from projection of the odd-neutron angular momentum along the symmetry axis and parity of the wave function (2019Mo01). Others: 3/2$^+$ from antisymmetrized molecular dynamics (AMD) calculations with the Gogny D1S force (2017Mo26). $T_{1/2}$: 11.3 ms *5* (stat) *4* (syst) (2013StZY, implant-β correlation). Other: 72 ms *43* (2008ReZZ,1995ReZZ) and ≈9 ms (1999YoZW, implant-β correlation, preliminary).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{35}Mg Levels (continued)

E(level)†	J^π	XREF	Comments
			Theoretical $\%\beta^-0n=29$, $\%\beta^-1n=66$, $\%\beta^-2n=5$ (2021Mi17). Theoretical $\%\beta^-0n=65$, $\%\beta^-1n=32$, $\%\beta^-2n=3$ (2019Mo01). J^π: $3/2^-$ from shell−model calculations with the SDPF−M and SDPF−M+$2p_{1/2}$ interactions (2017Mo26). Near degenerate 30-keV $3/2^-$ and $5/2^-$ g.s. from Monte Carlo shell-model calculations with the SDPF-M interaction (2011Ga15), and $3/2^-$ g.s. from shell-model calculations with the SDPF-U interaction (2011Ga15). $3/2^-$ from projection of the odd-neutron angular momentum along the symmetry axis and parity of the wave function (2019Mo01). Others: $3/2^+$ from antisymmetrized molecular dynamics (AMD) calculations with the Gogny D1S force (2017Mo26). $T_{1/2}$: 11.3 ms *5* (stat) *4* (syst) (2013StZY, implant-β correlation). Other: 72 ms *43* (2008ReZZ,1995ReZZ) and ≈9 ms (1999YoZW, implant-β correlation, preliminary). Reduced strong absorption radius 1.64 fm^2 *15* from 2006Kh08. The rms matter radius=3.40 fm *24* (2011Ka01).
0+x		BC	E(level): x≤80 keV (2011Ga15 detection threshold); x≤200 keV (2017Mo26 detection threshold). Monte Carlo shell-model calculations with the SDPF-M interaction predicts a $3/2^-$ level at 30 keV (2011Ga15). Shell-model calculations with the SDPF-M interaction predicts a $5/2^-$ level at 84 keV (2017Mo26). Shell-model calculations with the SDPF−M+$2p_{1/2}$ interaction predicts a $1/2^-$ level at 141 keV.
0+y?		C	XREF: C(0+y?) E(level): y≤200 keV (2017Mo26 detection threshold). 2017Mo26 suggested a low-lying L=3 level from the observed L=3 component in the inclusive parallel momentum distribution.
206+x *8*		C	J^π: 2017Mo26 stated that based on the observed weak γ-ray intensity, this level is not the $1/2^-$ level at 141 keV predicted by shell−model calculations with the SDPF−M+$2p_{1/2}$ interaction.
445+x *5*	$(3/2^+,5/2^+)$‡	BC	
619+x *7*	$(1/2^-,3/2^-)$‡	BC	
670+x *8*		BC	

† From Eγ data in 2011Ga15 (^{38}Si,^{35}Mgγ) and 2017Mo26 (^{36}Mg,^{35}Mgγ),(^{37}Al,^{35}Mgγ).
‡ From measured parallel-momentum distributions and deduced L-transfers in 2017Mo26 (^{36}Mg,^{35}Mgγ),(^{37}Al,^{35}Mgγ).

γ(^{35}Mg)

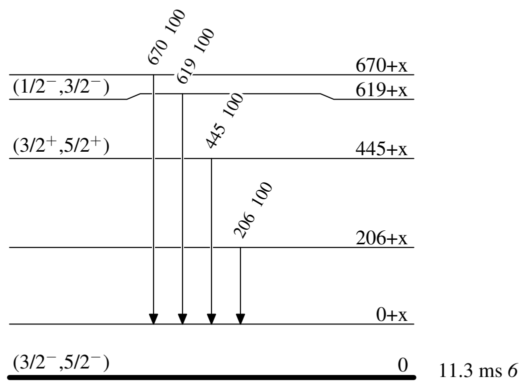
E_i(level)	J^π_i	E_γ	I_γ†	E_f	Comments
206+x		206 *8*	100	0+x	E_γ: From 2017Mo26.
445+x	$(3/2^+,5/2^+)$	445 *5*	100	0+x	E_γ: weighted average of 443 *7* (2017Mo26) and 446 *5* (2011Ga15).
619+x	$(1/2^-,3/2^-)$	619 *7*	100	0+x	E_γ: weighted average of 616 *8* (2017Mo26) and 621 *7* (2011Ga15).
670+x		670 *8*	100	0+x	E_γ: From 2011Ga15, as this γ is not resolved from the 616γ in 2017Mo26, but its presence is indicated in the fit of the spectrum. 2017Mo26 stated that the origin of the 670γ remained vague.

† From 2017Mo26 (^{36}Mg,^{35}Mgγ),(^{37}Al,^{35}Mgγ).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{35}_{12}Mg_{23}$