^{70}Zn(^{238}U,Xγ) 2015Ce03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 207,1 (2026)	1-Apr-2023

2015Ce03: ^{69}Zn was produced using deep-inelastic reaction in inverse kinematics with a ^{238}U beam at 6.76 MeV/nucleon impinging on a ^{70}Zn target that was deposited on a thick Mg backing. ^{69}Zn ions were identified event-by-event using a VAMOS spectrometer at GANIL facility. Prompt gammas emitted by the recoil nuclei were detected using the EXOGAM array that consisted of four Ge clover detectors placed at 90° and another at 135° with respect to the beam direction. Measured Eγ, Iγ, $\gamma\gamma$-coin, level lifetimes by RDDS technique using Cologne plunger device and EXOGAM array of Ge detectors. Deduced levels, J, π, level lifetimes, B(M1). Comparison with shell-model calculations.

^{69}Zn Levels

E(level)[†]	J$^\pi$	T$_{1/2}$[‡]	Comments
0.0	1/2$^-$		
531.30 *25*	5/2$^-$	≥19.4 ps	
834.51 *30*	(3/2$^-$)	≤0.35 ps	E(level): 2015Ce03 (Fig.2) had incorrectly indicated this level is uncertain from the level scheme in 2014Ne01.
1108.7 *11*		2.63 ps *76*	
1180.71 *25*	5/2$^-$		

[†] From least-squares fit to Eγ data by the evaluator.
[‡] From recoil-distance Doppler-shift method using a plunger device, and differential decay-curve analysis (2015Ce03).

γ(^{69}Zn)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	Comments
531.3 *3*	531.30	5/2$^-$	0.0	1/2$^-$	[E2]	B(E2)(W.u.)≤41 (2015Ce03)
[x]563.2 *9*						
649.4 *3*	1180.71	5/2$^-$	531.30	5/2$^-$	[M1]	
834.5 *3*	834.51	(3/2$^-$)	0.0	1/2$^-$	[M1]	B(M1)(W.u.)≥0.11 (2015Ce03)
1108.7 *11*	1108.7		0.0	1/2$^-$		E$_\gamma$: Transition seems to show two gammas at 1093.8 *8* and 1108.7 *11* keV. Authors in 2015Ce03 believe that the gammas correspond to the "shifted" and 'unshifted" components of the same transition due the energy distance between these two peaks and the evolution of peak intensities as a function of target-degrader distance.
1180.7 *3*	1180.71	5/2$^-$	0.0	1/2$^-$		

[†] From $\gamma\gamma$-coincidences in 2015Ce03.
[x] γ ray not placed in level scheme.

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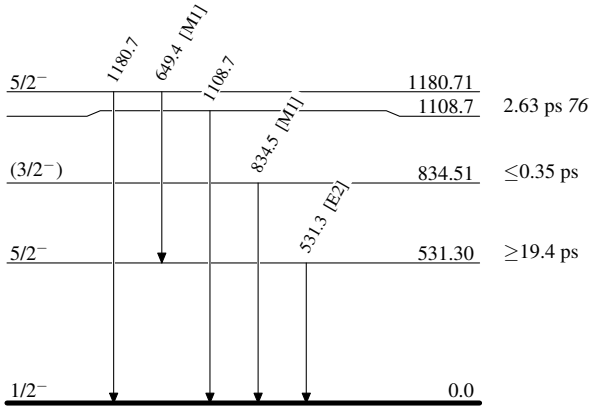
Level Scheme



$^{69}_{30}Zn_{39}$