^{106}Cd(^{64}Zn,2p3nγ) 2002Ap03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

2002Ap03: E=334 MeV ^{64}Zn beam was produced from the K130 cyclotron at JYFL facility. Target was 550 μg/cm^2 80% enriched ^{106}Cd. Evaporation residues were separated by the RITU gas-filled Separator and implanted into a 16-strip position-sensitive silicon detector. γ rays were detected with the JUROSPHERE array consisting of five NORDBALL, five TESSA and fifteen EUROGAM Phase-I Ge detectors. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$.

No level scheme was proposed by 2002Ap03 but authors suggested that 499.7-597.3-489.9-633.9 might form a cascade to give highest level energy at 2220.8. But this cascade has not been confirmed by 2013Dr06. Using the gamma-ray energies in 2002Ap03, the level scheme given here is based on that proposed in 2013Dr06.

^{165}Os Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0[†]	(7/2$^-$)	71 ms *3*	T$_{1/2}$: from the Adopted Levels.
95.2[‡] *10*	(9/2$^-$)		
499.3[†] *5*	(11/2$^-$)		
584.8[‡] *12*	(13/2$^-$)		
1096.0[†] *7*	(15/2$^-$)		
1218.0[‡] *13*	(17/2$^-$)		
1654.6[†] *9*	(19/2$^-$)		
1917.8[‡] *14*	(21/2$^-$)		
2247.6[†] *14*	(23/2$^-$)		
2609.4[‡] *17*	(25/2$^-$)		

[†] Band(A): Band based on (7/2$^-$).
[‡] Band(B): Band based on (9/2$^-$).

γ(^{165}Os)

Asymmetry ratio R(θ)=I$_{158^\circ}$/I$_{79^\circ+101^\circ}$ is given under comments. Typical values are 1 for stretched quadrupoles and 0.6 for stretched dipoles.

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	α[‡]	Comments
95.2 *10*		95.2	(9/2$^-$)	0.0	(7/2$^-$)	(M1)	6.48 *22*	E$_\gamma$,Mult.: from ^{92}Mo(^{78}Kr,2p3nγ) (2013Dr06); γ was not reported by 2002Ap03.
[x]384.7 *6*	12 *3*							
[x]389.8 *6*	12 *3*							
[x]455.4 *7*	5.3 *19*							E$_\gamma$: this γ is not confirmed in 2013Dr06.
489.9 *3*	74 *5*	584.8	(13/2$^-$)	95.2	(9/2$^-$)	(Q)		Mult.: D+Q in 2002Ap03, but Q required by assigned J^π values. R(θ)=0.75 *10*.
499.7 *3*	98 *6*	499.3	(11/2$^-$)	0.0	(7/2$^-$)	Q		R(θ)=1.04 *12*.
[x]518.4 *5*	24 *5*							
559.2 *5*	46 *6*	1654.6	(19/2$^-$)	1096.0	(15/2$^-$)	Q		R(θ)=0.89 *9*.
[x]585.3 *4*	14 *8*							
593.0 *4*	20 *5*	2247.6	(23/2$^-$)	1654.6	(19/2$^-$)			
597.3 *4*	100 *5*	1096.0	(15/2$^-$)	499.3	(11/2$^-$)	Q		R(θ)=1.25 *16*.
[x]606.2 *5*	10 *3*							

Continued on next page (footnotes at end of table)

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γ(^{165}Os) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
633.9 *4*	66 *4*	1218.0	(17/2$^-$)	584.8	(13/2$^-$)	Q	R(θ)=1.33 *22*.
[x]655.9 *4*	23 *7*						
694.1 *5*	17 *9*	2609.4	(25/2$^-$)	1917.8	(21/2$^-$)		
700.8 *4*	35 *8*	1917.8	(21/2$^-$)	1218.0	(17/2$^-$)		

[†] Mult=Q is implied for ΔJ=2, quadrupole (most likely E2) transition.
[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[x] γ ray not placed in level scheme.

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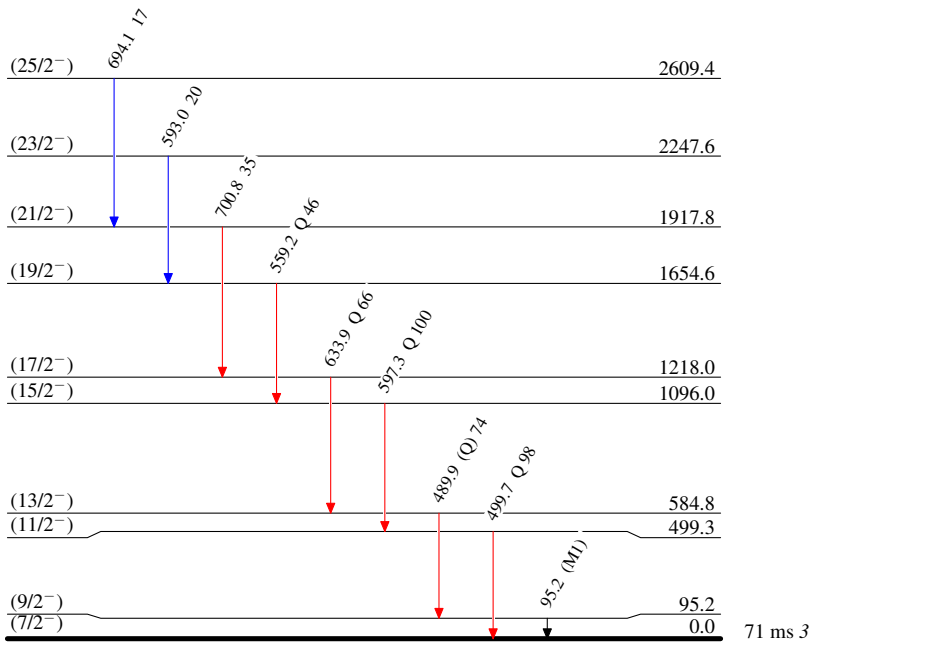
Level Scheme

Intensities: Relative I_γ



$^{165}_{76}Os_{89}$

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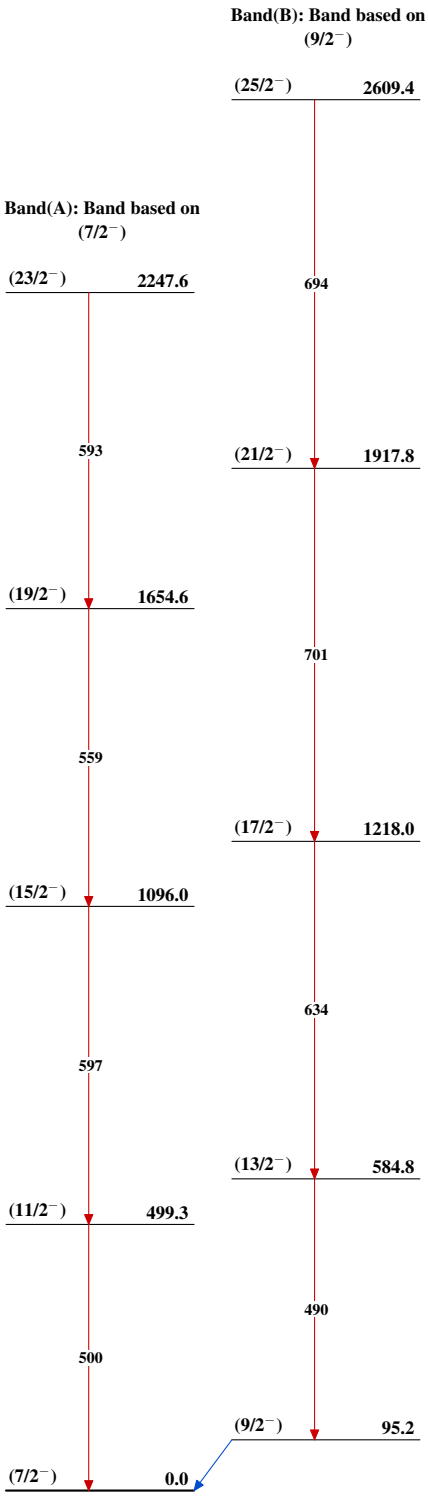

$^{165}_{76}Os_{89}$