^{78}Zn IT decay (319 ns) 2000Da07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh	NDS 110, 1917 (2009)	30-Jun-2009

Parent: ^{78}Zn: E=2672.5 *10*; $J^\pi=(8^+)$; $T_{1/2}$=319 ns *9*; %IT decay=100.0

2000Da07 (also 1999Le68,1999DaZQ thesis): ^{78}Zn isomer identified In Ni(^{86}Kr,X), E=60.5 MeV/α; measured Eγ, Iγ, Iγ(t) and isomer half-life. The assignment and ordering of transitions was based on systematics.

Other:

1998Gr14: Ni(^{86}Kr,X), E=60.3 MeV/α; measured Eγ, Iγ(t), deduced excitation energy and isomer $T_{1/2}$<30 μs.

Additional information 1.

Total decay energy of 2640 keV *118* calculated (by RADLIST code) from level scheme is consistent with the expected value of 2672 keV.

^{78}Zn Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	0^+		
729.6 *5*	2^+		
1619.5 *7*	(4^+)		
2527.8 *9*	(6^+)		
2672.5 *10*	(8^+)	319 ns *9*	$T_{1/2}$: from γ(t) (2000Da07). Other: <30 μs (1998Gr14).

[†] From Eγ's.

[‡] From systematics of 8^+ isomers In N=48 isotones (2000Da07, 2002Is03). The same assignments are given in 'Adopted Levels'.

$\gamma(^{78}Zn)$

Eγ	Iγ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
144.7 *5*	90 *5*	2672.5	(8^+)	2527.8	(6^+)	(E2)	0.162 *4*	α(K)=0.144 *3*; α(L)=0.0162 *4*; α(M)=0.00229 *5*; α(N+..)=7.72×10^{-5} *15* α(N)=7.72×10^{-5} *15* Mult.: from intensity balance At 2528 level mult=E2 or M2, but E2 is more likely from systematics of N=48 isotones.
729.6 *5*	100 *8*	729.6	2^+	0.0	0^+			
889.9[‡] *5*	96 *8*	1619.5	(4^+)	729.6	2^+			
908.3[‡] *5*	102 *8*	2527.8	(6^+)	1619.5	(4^+)			

[†] From intensity balance At 2528 level.

[‡] The ordering of 889.9-908.3 cascade is not certain in 2000Da07, the ordering given in 2008Wi01 is adopted here.

[#] Absolute intensity per 100 decays.

[@] 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.

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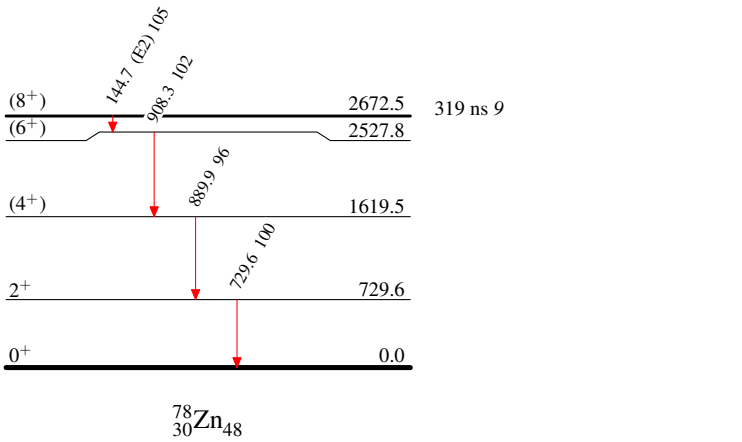
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

%IT=100.0



$^{78}_{30}Zn_{48}$