^{70}Zn(n,n′γ) 1982Ko35

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal, E. A. Mccutchan	NDS 136, 1 (2016)	1-Jul-2016

1982Ko35: E(n)=reactor fast neutrons. Measured Eγ, Iγ using Compton-suppressed Ge(Li) detector; compared level populations with analysis using Hauser-Feshbach Moldauer (HFM) approximation.
1985Ko42: E(n)=reactor fast neutrons. Measured Eγ, Iγ, γ(θ) using Compton-suppressed Ge(Li) detector.
1985Ko27: E(n)=reactor fast neutrons. Measured Eγ, Iγ using Compton-suppressed Ge(Li) detector; deduced $T_{1/2}$ using Doppler Shift Attenuation Method (DSAM).
Others: 1985KoZL, 1982HaZH,1976SmZT.

^{70}Zn Levels

E(level)†	Jπ‡	$T_{1/2}$#	Comments
0.0	0^+		
884.8 *1*	2^+		
1068.2 *2*	0^+		
1759.1 *1*	2^+	0.24 ps *+24−12*	
1786.5 *1*	4^+		Jπ: proposed as 2^+ in 1982Ko35 from population strength in (n,n′γ).
1957.7 *2*	2^+		Jπ: proposed as 4^+ in 1982Ko35 from population strength in (n,n′γ).
2140.4 *2*	0^+		
2538.0 *1*	2^+	0.21 ps *+28−8*	
2693.6 *2*	4^+	0.28 ps *+35−14*	
2858.5 *4*	3^-		
2949.6 *2*	$1^+,2^+,3^+$	0.042 ps *+21−14*	Jπ: proposed as 3^+ in 1982Ko35 from population strength in (n,n′γ).
3038.5 *2*	5^-		Jπ: proposed as 4^- in 1982Ko35 from population strength in (n,n′γ).
3222.3 *1*	1		Jπ: Proposed as 1^+ in 1982Ko35.
3710.6 *6*	2^+		
4146.4 *4*			Jπ: proposed as 3^- in 1982Ko35 from population strength in (n,n′γ).

† From a least-squares fit to Eγ, by evaluators.
‡ From the Adopted Levels. Differences in the assignments suggested by 1982Ko35 are given in the comments.
# From DSAM in 1985Ko27.

γ(^{70}Zn)

E_i(level)	J_i^π	E_γ†	I_γ†‡	E_f	J_f^π	Mult.#	δ#	Comments
884.8	2^+	884.9 *1*	100	0.0	0^+			
1068.2	0^+	184.4 *2*	100	884.8	2^+			
1759.1	2^+	874.4 *1*	100	884.8	2^+	D+Q	+0.75 *15*	
		1759.2 *1*	41	0.0	0^+			
1786.5	4^+	901.7 *1*	100	884.8	2^+			
1957.7	2^+	1072.5 *2*	100	884.8	2^+			
2140.4	0^+	354.0 *2*	54	1786.5	4^+			Eγ: not included in Adopted Gammas. Adopted J^π of initial and final levels would require E4 or M5 multipolarity for the transition. In addition, transition is not observed in ^{70}Cu β^- decay (6.6 s).
		1255.6 *2*	100	884.8	2^+			
2538.0	2^+	751.5 *2*	≈18	1786.5	4^+			
		778.9 *2*	58	1759.1	2^+			
		1653.2 *2*	100	884.8	2^+	D+Q	−1.5 *3*	
		2537.9 *3*	20	0.0	0^+			
2693.6	4^+	735.5 *2*	11	1957.7	2^+			
		934.9 *3*	30	1759.1	2^+			

Continued on next page (footnotes at end of table)

^{70}Zn(n,n′γ) 1982Ko35 (continued)

γ(^{70}Zn) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
2693.6	4^+	1809.2 *3*	100	884.8	2^+			
2858.5	3^-	1073.0[@] *2*	45	1786.5	4^+			
		1099.9 *7*	90	1759.1	2^+			
		1973.5 *4*	100	884.8	2^+			
2949.6	$1^+,2^+,3^+$	1191.9 *3*	72	1759.1	2^+			
		2064.1 *2*	100	884.8	2^+	D+Q	+3.8 *5*	
3038.5	5^-	1252.0 *3*	61	1786.5	4^+			
		2153.7 *2*	100	884.8	2^+			E_γ: not included in Adopted Gammas. Transition is not observed in ^{70}Cu β^- decay or Coulomb excitation and such a placement would require an E3 or M4 transition which strongly violates RUL.
3222.3	1	2155.0 *2*	≈33	1068.2	0^+			
		3222.0 *1*	100	0.0	0^+			
3710.6	2^+	1951.5 *6*	100	1759.1	2^+			
4146.4		1107.9 *3*	100	3038.5	5^-			

[†] From 1982Ko35. Uncertainties on Eγ are from 1976SmZT.
[‡] Relative photon branching from each level.
[#] From γ(θ) in 1985Ko42.
[@] Placement of transition in the level scheme is uncertain.

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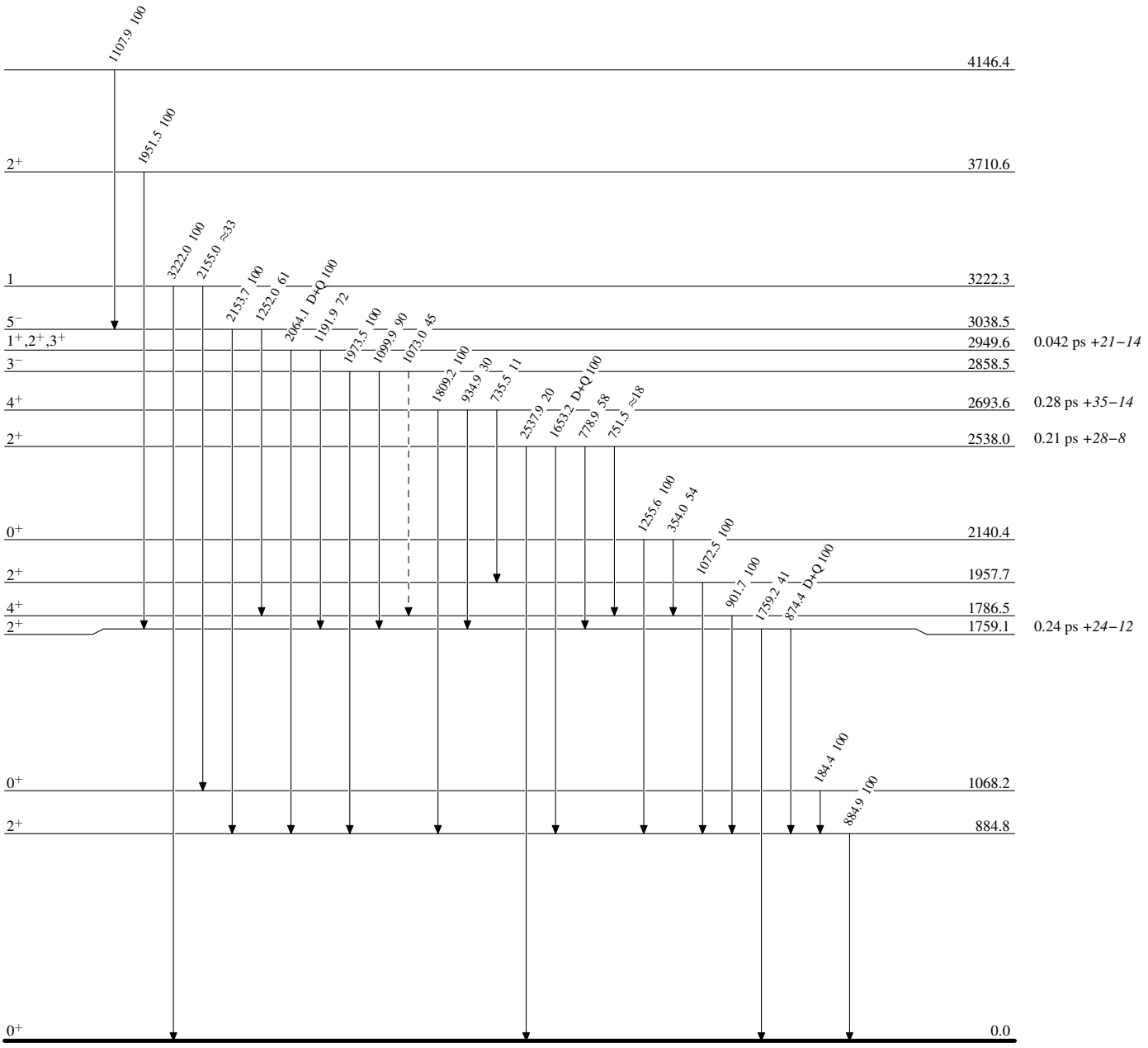
Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{70}_{30}Zn_{40}$