^{116}Cd(α,2nγ),(^{7}Li,p4nγ) 1979Br07,1980Va13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	K. Kitao	NDS 75,99 (1995)	1-Feb-1993

The level scheme is from 1980Va13.

^{116}Cd(α,2nγ) 1980Va13,1979Br07: E=17-33 MeV, Eγ, Iγ, $\gamma\gamma$(t), σ(Eγ,θ), E(ce), I(ce), linear pol, enriched target.
1973IsZQ: E=24 MeV, γ(θ,H,t)
^{116}Cd(^{7}Li,p4nγ) 1987Lu06: E=26-40 MeV; 97% enriched target; singles and off-beam γ's spectra, γ(t).
Other: 1986Da05. This is a preliminary report for 1987Lu06

^{118}Sn Levels

E(level)†	J$^{\pi}$‡	T$_{1/2}$@	Comments
0.0	0$^+$		
1229.63 *6*	2$^+$		
2042.79# *21*	2$^+$		
2280.27 *9*	4$^+$		
2321.17 *19*	5$^-$	21.7 ns *2*	T$_{1/2}$: from 1980Va13. Others: 22 ns (1969Ya05), 22 ns (1973IsZQ).
2488.86# *18*	4$^+$		
2574.87 *20*	7$^-$	245 ns *40*	g=0.0978 *6* (1973IsZQ). T$_{1/2}$: from 1980Va13. Others: 230 ns (1969Ya05), 217 ns (1973IsZQ).
2733.8 *9*	4$^+$		
2878.5 *4*	4,5$^-$		
2999.38# *18*	6$^+$		
3052.12 *21*	8$^+$		
3108.0 *3*	10$^+$	2.52 μs *6*	T$_{1/2}$: from 1987Lu06. Others: 2.50 μs *14* (1980Va13), 2.93 μs (1973IsZQ), 2.65 μs *10* (1986Da05). g=0.2432 *7* (1973IsZQ).
3691.9# *5*	8$^+$		
4495.3# *6*	(10$^+$)		
5379.3?# *12*	(12$^+$)		

† From a least-squares fit to E(γ's).
‡ Given by authors based on mult of γ's and expected band structure.
# Positive parity quasi-rotational band on 0$^+$ (1758 level), but the level had not been confirmed in this experiment.
@ From pulsed beam measurement.

γ(^{118}Sn)

α(K)exp normalized to α(K)(1229.6γ E2)=0.00719 (1980Va13, 1979Br07).

E$_\gamma$†	I$_\gamma$†‡	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.@	α&	Comments
41.0# *4*	14# *5*	2321.17	5$^-$	2280.27	4$^+$	E1	2.18	α(K)=1.85; α(L)=0.263; α(M)=0.0507 α: 1980Va13 report α=2.9 *10* based on an intensity balance.
55.9 *2*	0.4# *2*	3108.0	10$^+$	3052.12	8$^+$	E2	12.9	α(K)=6.81; α(L)=4.89; α(M)=1.00; α(N+..)=0.203 E$_\gamma$: weighted average of 56.1 *3* (1980Va13) and 55.8 *2*

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^{116}Cd(α,2nγ),(^{7}Li,p4nγ) 1979Br07,1980Va13 (continued)

$\gamma(^{118}Sn)$ (continued)

E_γ[†]	I_γ[†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ	α[&]	Comments
									(1987Lu06).
208.5 *4*	1.8 *2*	2488.86	4^+	2280.27	4^+	M1+E2	−0.17 *4*	0.0762 *7*	α: 1980Va13 report α=17 *6*. α(K)=0.0659 *5*; α(L)=0.0084 *1*; α(M)=0.00163 *3*; α(N+..)=0.00037 *1* α(K)exp=0.081 *20*. δ: from adopted gammas.
253.70# *6*	52# *3*	2574.87	7^-	2321.17	5^-	E2		0.0620	α(K)=0.0516; α(L)=0.0084; α(M)=0.00166; α(N+..)=0.00036 α(K)exp=0.052 *6*.
446.0 *2*	2.8 *2*	2488.86	4^+	2042.79	2^+	E2		0.0103	α(K)=0.0088; α(L)=0.00121; α(M)=0.00024 α(K)exp=0.010 *3*.
477.25# *6*	28# *2*	3052.12	8^+	2574.87	7^-	E1		0.00266	α=0.00266; α(K)=0.00232; α(L)=0.00028 α(K)exp=0.0021 *7*.
510.5 *1*	12 *2*	2999.38	6^+	2488.86	4^+	[E2]		0.00704	α=0.00704; α(K)=0.00597; α(L)=0.00080 E_γ: deduced from ce line. I_γ: calculated from Ice assuming mult=E2.
598.2# *4*	6.9# *10*	2878.5	$4,5^-$	2280.27	4^+				α(K)exp=0.050 *1*.
692.5 *4*	9.2 *3*	3691.9	8^+	2999.38	6^+	E2		0.00311	α=0.00311; α(K)=0.00266; α(L)=0.00034 α(K)exp=0.0030 *5*. Mult.: stretched E2 from $\gamma(\theta)$.
719.2 *2*	7.2 *3*	2999.38	6^+	2280.27	4^+	E2		0.00283	α=0.00283; α(K)=0.00242; α(L)=0.00031 α(K)exp=0.0031 *6*. Mult.: stretched E2 from $\gamma(\theta)$.
803.4 *3*	2.1 *2*	4495.3	(10^+)	3691.9	8^+	(E2)		0.00215	α=0.00215; α(K)=0.00184; α(L)=0.00023 α(K)exp=0.005 *3*. Mult.: stretched E2 from $\gamma(\theta)$.
813.1 *3*	2.6 *2*	2042.79	2^+	1229.63	2^+	M1+E2	−2.34 *16*	0.00216 *1*	α=0.00216 *1*; α(K)=0.00185 *1*; α(L)=0.00023 α(K)exp=0.0028 *12*. δ: from adopted gammas.
884 *1*	1.0 *3*	5379.3?	(12^+)	4495.3	(10^+)				I_γ: from coin spectrum.
1050.64 *6*	87 *4*	2280.27	4^+	1229.63	2^+	E2		0.00116	α=0.00116; α(K)=0.00100; α(L)=0.00012 α(K)exp=0.00100 *13*.
1091.5# *2*	3.2# *3*	2321.17	5^-	1229.63	2^+				
1229.63 *6*	100	1229.63	2^+	0.0	0^+	[E2]		0.00083	α=0.00083; α(K)=0.00072
1259.2 *6*	1.8 *3*	2488.86	4^+	1229.63	2^+	E2			
1504.2# *9*	3.3# *4*	2733.8	4^+	1229.63	2^+				
2042.1 *8*	2.2 *3*	2042.79	2^+	0.0	0^+				

[†] From (α,2nγ). Values are from 1979Br07 unless otherwise noted.

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^{116}Cd(α,2nγ),(^{7}Li,p4nγ) 1979Br07,1980Va13 (continued)

γ(^{118}Sn) (continued)

‡ Relative to I(1229.6γ)=$^{100.}$At24 MeV.
# From 1980Va13.
@ From α(K)exp and γ(pol), except as noted.
& 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.

^{116}Cd(α,2nγ),(^{7}Li,p4nγ) **1979Br07,1980Va13**

Level Scheme

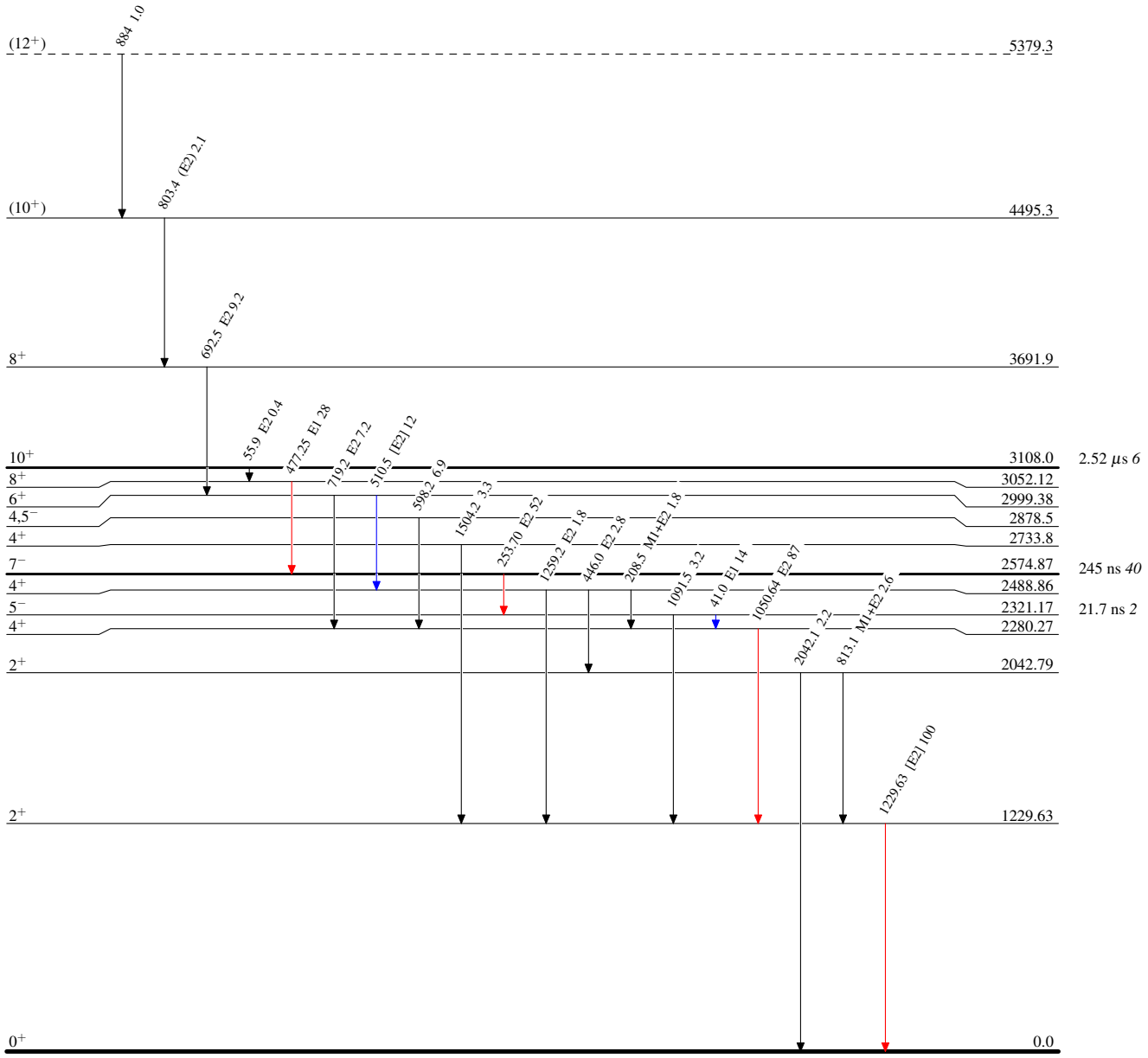
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{118}_{50}Sn_{68}$