^{113}Cd(α,2nγ) 1999Lo04,1991Vi10

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 2391 (2012)	1-Sep-2012

1991Vi10:E(α)=27 MeV, enriched ^{113}Cd 90.2%.
Measured: γ, $\gamma\gamma$, $\gamma(\theta)$.
1999Lo04: E(α)=27 MeV, enriched ^{113}Cd 90.2%. Measured lifetimes by using DSAM.
Level scheme is mainly adopted from 1999Lo04. 1999Lo04 have used the previous work of 1998Sa30 and 1997Se02.

^{115}Sn Levels

E(level)	J$^\pi$†	T$_{1/2}$‡	E(level)	J$^\pi$†	T$_{1/2}$‡
0.0	1/2$^+$		2685.16 *23*	17/2$^-$	1.2 ps *+5−3*
497.30 *8*	3/2$^+$		2807.5 *3*	(17/2)	0.6 ps *+4−3*
612.70 *11*	7/2$^+$		2842.3 *3*	15/2$^-$	0.62 ps *+21−14*
713.29 *15*	11/2$^-$		2938.0 *3*	(17/2$^-$)	>1.7 ps
986.61 *9*	5/2$^+$	>1.4 ps	3003.4 *3*	19/2$^-$	0.62 ps *+35−21*
1280.2 *4*	3/2$^+$	0.6 ps *+4−3*	3203.3 *3*	17/2$^-$	>1.0 ps
1416.80 *11*	5/2$^+$	<0.97 ps	3219.7 *3*	17/2$^+$	1.2 ps *+4−3*
1633.91 *20*	3/2$^+$	0.97 ps *+35−14*	3258	19/2$^-$	
1644	(7/2$^-$)		3318.5 *3*	19/2$^-$	1.3 ps *+5−4*
1785.61 *23*	(9/2$^-$)	0.69 ps *+21−14*	3384.8 *3*	(19/2$^+$)	0.42 ps *+21−14*
1857.9 *3*	7/2$^+$	0.35 ps *7*	3471.9	19/2$^-$	
1945.62 *18*	(13/2$^-$)	1.3 ps *+4−3*	3509	21/2$^+$	
1996.30 *23*	11/2$^+$	1.04 ps *+21−14*	3665.9 *4*	(23/2$^+$)	
2024.82 *23*	15/2$^-$	1.0 ps *+4−3*	3839.1 *4*	(25/2$^+$)	
2084.26 *18*	7/2$^+$	0.90 ps *+28−14*	3878.4 *4*	21/2$^-$	0.8 ps *+4−2*
2207.8 *4*	5/2$^+$	1.0 ps *4*	3958	(23/2$^+$)	
2346.2 *10*	(11/2$^-$)		4028		
2592.18 *24*	(15/2$^-$)	>2.4 ps	4059.5 *4*	23/2$^-$	>1.0 ps
2644.3 *6*	15/2$^-$		4271.9 *5*	(27/2$^+$)	
2653.22 *22*	13/2$^-$	1.2 ps *+14−5*			

† Based on previously established J$^\pi$ and newly determined gamma multipolarities.
‡ From 1999Lo04.

γ(^{115}Sn)

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$‡	E$_f$	J$_f^\pi$	Mult.†	δ
497.30	3/2$^+$	497.3 *1*	100	0.0	1/2$^+$	M1+E2	+0.21 *2*
612.70	7/2$^+$	115.5 *1*	100	497.30	3/2$^+$	E2	
713.29	11/2$^-$	100.7 *1*	100	612.70	7/2$^+$	M2	
986.61	5/2$^+$	373.8 *3*	6.1 *14*	612.70	7/2$^+$	M1+E2	−0.26 *6*
		489.3 *2*	100 *6*	497.30	3/2$^+$	M1+E2	+0.040 *23*
		986.5 *1*	37.0 *8*	0.0	1/2$^+$	E2	
1280.2	3/2$^+$	293.6 *1*	3.5 *5*	986.61	5/2$^+$	M1+E2	+0.23 *+25−16*
		668.1 *1*	3.5 *8*	612.70	7/2$^+$	E2	
		783.0 *1*	9.0 *8*	497.30	3/2$^+$	M1+E2	≈+0.77
		1280.1 *1*	100 *14*	0.0	1/2$^+$	M1+E2	−2.2 *+5−8*
1416.80	5/2$^+$	136.7 *1*	1.7 *7*	1280.2	3/2$^+$	M1+E2	+0.17 *15*
		430.3 *1*	0.8 *6*	986.61	5/2$^+$	M1+E2	≈+0.55
		804.0 *1*	7 *1*	612.70	7/2$^+$	(M1+E2)	
		919.7 *1*	25.8 *10*	497.30	3/2$^+$	M1+E2	−0.17 *3*
		1416.8 *2*	100 *3*	0.0	1/2$^+$	E2	

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^{113}Cd(α,2nγ) 1999Lo04,1991Vi10 (continued)

$\gamma(^{115}Sn)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ[‡]	E_f	J_f^π	Mult.[†]	δ
1633.91	3/2$^+$	1021.1 *2*	11.2 *12*	612.70	7/2$^+$	E2	
		1136.5 *2*	25 *6*	497.30	3/2$^+$	(M1+E2)	
		1633.8 *2*	100 *9*	0.0	1/2$^+$	(M1+E2)	+0.7 *5*
1644	(7/2$^-$)	931[#]		713.29	11/2$^-$		
1785.61	(9/2$^-$)	1072.4 *2*	100	713.29	11/2$^-$	(M1+E2)	−1.6 *2*
1857.9	7/2$^+$	1360.6 *3*	100	497.30	3/2$^+$	E2	
1945.62	(13/2$^-$)	1232.3 *1*	100	713.29	11/2$^-$	M1+E2	+12 *+5−3*
1996.30	11/2$^+$	1383.8 *2*	100	612.70	7/2$^+$	E2	
2024.82	15/2$^-$	1311.7 *1*	100	713.29	11/2$^-$	E2	
2084.26	7/2$^+$	804.0 *4*	11 *3*	1280.2	3/2$^+$	E2	
		1097.6 *2*	100 *9*	986.61	5/2$^+$	(M1+E2)	
		1471.8 *4*	66 *6*	612.70	7/2$^+$	(M1+E2)	
		1586.9 *5*	50 *9*	497.30	3/2$^+$	E2	
2207.8	5/2$^+$	1221.1 *4*	100 *7*	986.61	5/2$^+$	(M1+E2)	
		1595.2	53 *14*	612.70	7/2$^+$	(M1+E2)	
2346.2	(11/2$^-$)	401.8[#] *7*	12 *4*	1945.62	(13/2$^-$)		
		561.7[#] *3*	100 *18*	1785.61	(9/2$^-$)		
		703[#]		1644	(7/2$^-$)		
		1634[#]		713.29	11/2$^-$		
2592.18	(15/2$^-$)	1878.6 *2*	100	713.29	11/2$^-$	(E2)	
2653.22	13/2$^-$	306.0 *6*	7 *2*	2346.2	(11/2$^-$)	(M1+E2)	
		628.2 *6*	54 *5*	2024.82	15/2$^-$	(M1+E2)	
		867.5 *3*	100 *10*	1785.61	(9/2$^-$)	(M1+E2)	
		1940.0 *2*	46 *9*	713.29	11/2$^-$	(M1+E2)	
2685.16	17/2$^-$	660.0 *2*	72 *12*	2024.82	15/2$^-$	M1+E2	+1.9 *3*
		739.4 *2*	100 *12*	1945.62	(13/2$^-$)	E2	
2807.5	(17/2)	862.4 *2*	100	1945.62	(13/2$^-$)	(E2)	
2842.3	15/2$^-$	496.1 *2*	32 *4*	2346.2	(11/2$^-$)	E2	
		817.3 *2*	100 *10*	2024.82	15/2$^-$	(M1+E2)	
		897.7 *2*	22 *4*	1945.62	(13/2$^-$)	(M1+E2)	
2938.0	(17/2$^-$)	252.8 *7*	33 *15*	2685.16	17/2$^-$	(M1+E2)	
		346.0 *5*	30 *15*	2592.18	(15/2$^-$)	(M1+E2)	
		913.1 *4*	100 *50*	2024.82	15/2$^-$	(M1+E2)	
		992.3 *3*	66 *33*	1945.62	(13/2$^-$)	(E2)	
3003.4	19/2$^-$	318		2685.16	17/2$^-$		
		978.5 *2*	100	2024.82	15/2$^-$	E2	
3203.3	17/2$^-$	360.1 *5*	39 *3*	2842.3	15/2$^-$	(M1+E2)	
		550.1 *3*	100 *3*	2653.22	13/2$^-$	E2	
		559	11 *2*	2644.3	15/2$^-$	(M1+E2)	
		1178.3 *3*	55 *6*	2024.82	15/2$^-$	(M1+E2)	
		1257.8 *3*	21 *3*	1945.62	(13/2$^-$)	E2	
3219.7	17/2$^+$	1194.5 *2*	100	2024.82	15/2$^-$	E1	
3258	19/2$^-$	255[#]		3003.4	19/2$^-$		
		573[#]		2685.16	17/2$^-$		
		1233[#]		2024.82	15/2$^-$		
3318.5	19/2$^-$	115.2 *2*	<0.2	3203.3	17/2$^-$	(M1+E2)	
		475.4 *2*	5.0 *3*	2842.3	15/2$^-$	(E2)	
		674.4 *2*	3.0 *5*	2644.3	15/2$^-$	E2	
		1293.2 *2*	100 *5*	2024.82	15/2$^-$	E2	
3384.8	(19/2$^+$)	165.5 *4*	20.3 *12*	3219.7	17/2$^+$	(M1+E2)	−0.05 *5*
		576.6 *5*	7.3 *20*	2807.5	(17/2)	(M1+E2)	
		700.1 *2*	100 *5*	2685.16	17/2$^-$	(E1)	
3471.9	19/2$^-$	629[#]		2842.3	15/2$^-$		

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^{113}Cd(α,2nγ) 1999Lo04,1991Vi10 (continued)

$\gamma(^{115}Sn)$ (continued)

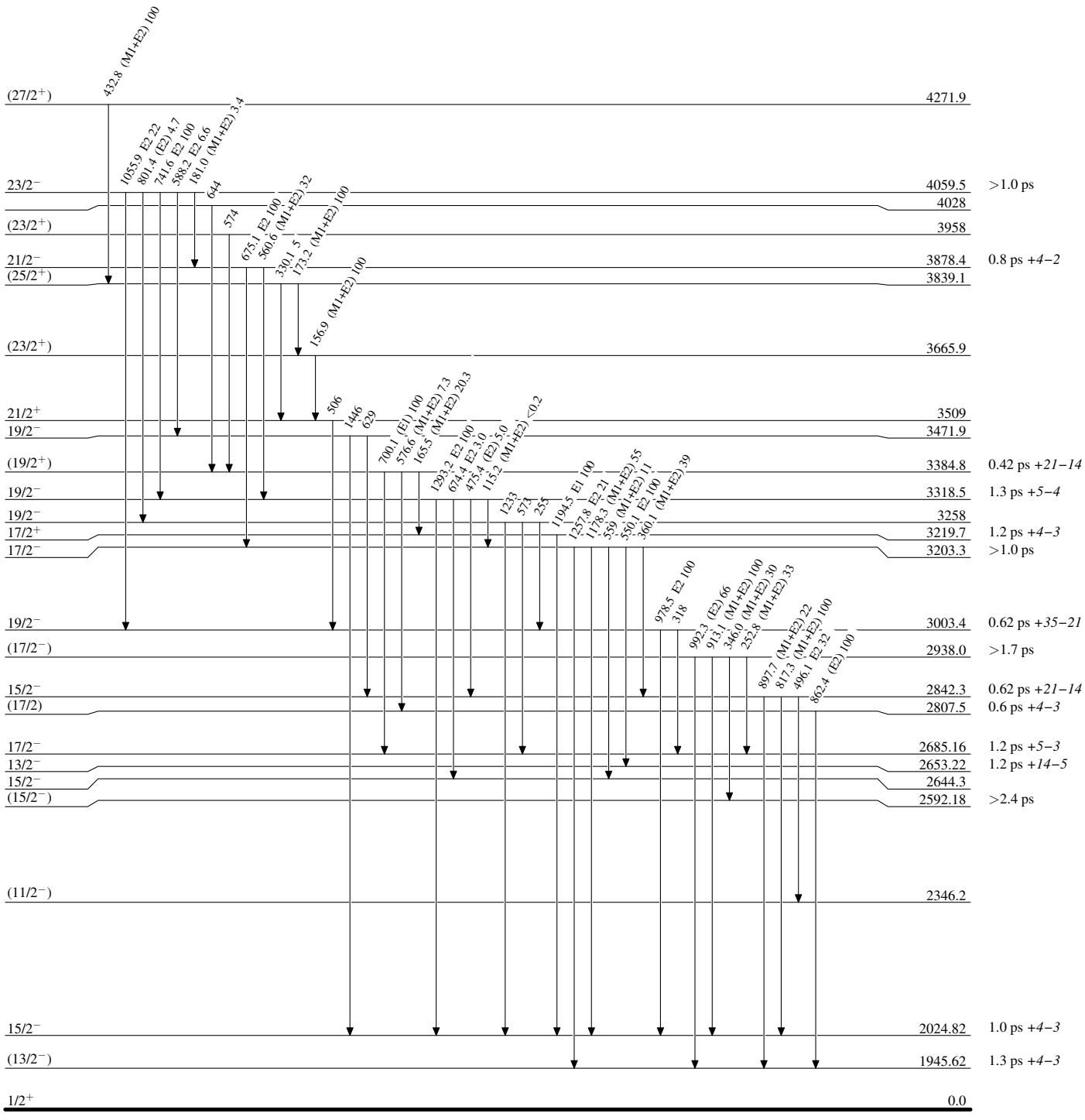
E_i(level)	J_i^π	E_γ	I_γ[‡]	E_f	J_f^π	Mult.[†]	δ
3471.9	19/2$^-$	1446[#]		2024.82	15/2$^-$		
3509	21/2$^+$	506[#]		3003.4	19/2$^-$		
3665.9	(23/2$^+$)	156.9 *1*	100	3509	21/2$^+$	(M1+E2)	+0.06 *4*
3839.1	(25/2$^+$)	173.2 *2*	100 *5*	3665.9	(23/2$^+$)	(M1+E2)	+0.07 *3*
		330.1 *4*	5 *2*	3509	21/2$^+$		
3878.4	21/2$^-$	560.6 *3*	32 *3*	3318.5	19/2$^-$	(M1+E2)	
		675.1 *3*	100 *5*	3203.3	17/2$^-$	E2	
3958	(23/2$^+$)	574		3384.8	(19/2$^+$)		
4028		644		3384.8	(19/2$^+$)		
4059.5	23/2$^-$	181.0 *2*	3.4 *4*	3878.4	21/2$^-$	(M1+E2)	
		588.2 *2*	6.6 *5*	3471.9	19/2$^-$	E2	
		741.6 *2*	100 *4*	3318.5	19/2$^-$	E2	
		801.4 *2*	4.7 *5*	3258	19/2$^-$	(E2)	
		1055.9 *2*	22 *1*	3003.4	19/2$^-$	E2	
4271.9	(27/2$^+$)	432.8 *3*	100	3839.1	(25/2$^+$)	(M1+E2)	+0.15 *7*

[†] From experimental A_2 and A_4 and derived from a fitting of the distribution.
[‡] Photon branching from each level.
[#] From 1991Vi10.

^{113}Cd(α,2nγ) 1999Lo04,1991Vi10

Level Scheme

Intensities: Relative photon branching from each level

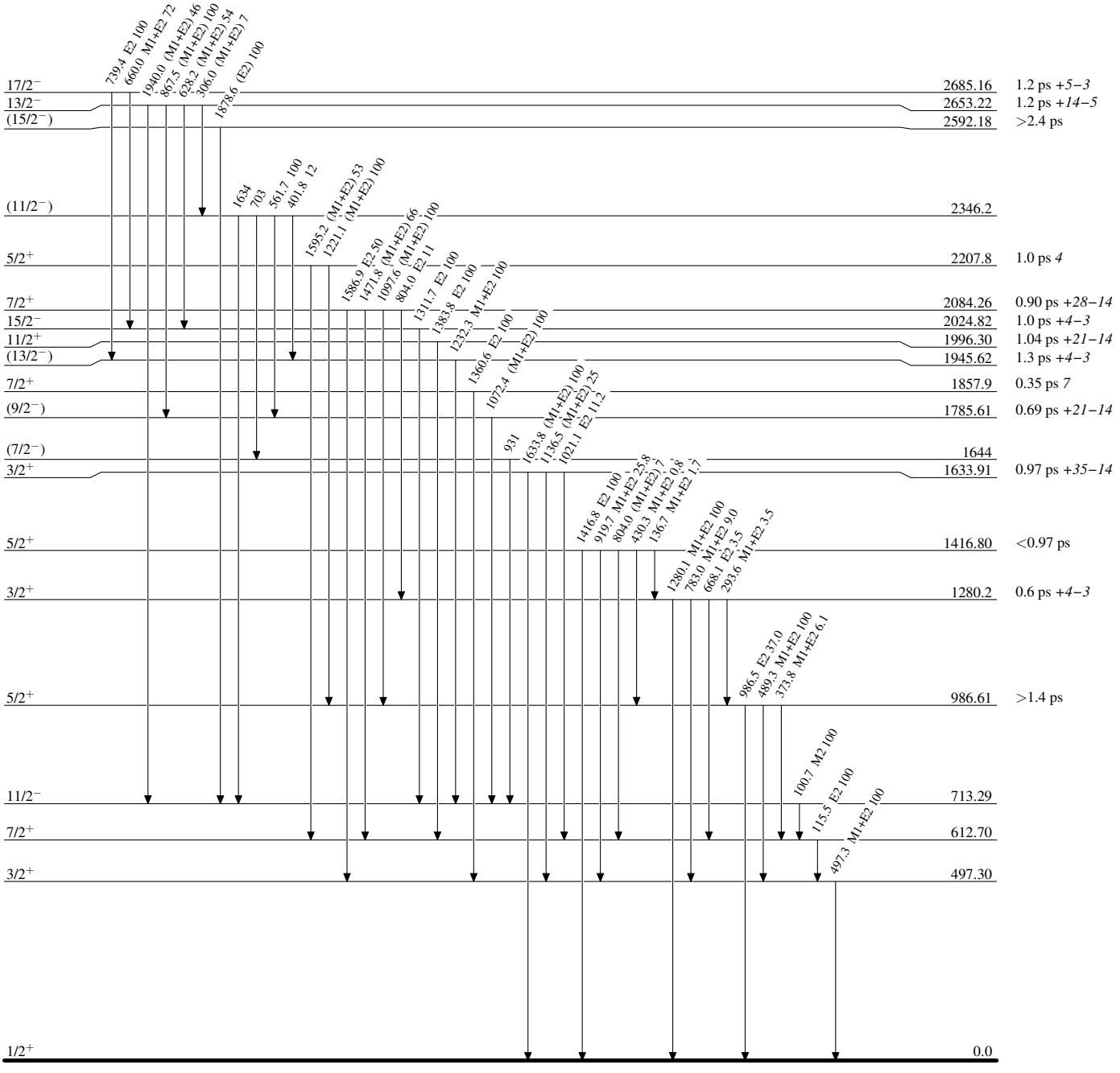


$^{115}_{50}Sn_{65}$

^{113}Cd(α,2nγ) 1999Lo04,1991Vi10

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{115}_{50}Sn_{65}$