Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

Q(β^-)=−9195 *5*; S(n)=10846 *5*; S(p)=5041 *6*; Q(α)=−3399 *7* 2012Wa38
Q(β^-n)=−2.37×10^4 *3* (syst.), Q(εp)=3795 *5* (syst.) 2012Wa38.
Mass measurement: 2011Ha08 (SHIPTRAP Penning trap, GSI Darmstadt) Measured mass excess=−66882.8 *39* keV.
Mass measurement: 2011Fa10 (Canadian Penning trap mass spectrometer) Measured mass excess=−66887.1 *41* keV.

^{87}Mo Levels

Cross Reference (XREF) Flags

A ^{58}Ni(^{32}S,2pnγ),^{40}Ca(^{50}Cr,2pnγ)

E(level)	J$^\pi$[†]	T$_{1/2}$[‡]	XREF	Comments
0.0[#]	(7/2$^+$)	14.1 s *3*	A	%ε+%β^+=100; %β^+p=15 *8* From 1997Hu07: Branching ratio percentages for β-delayed proton decay populating the first 2$^+$, 4$^+$, and 6$^+$ states in ^{86}Zr are 11 *6*, 2 *1*, and 2 *1*. J$^\pi$: from systematics of N=45 isotones. T$_{1/2}$: weighted average of 14.6 *15* (1977Ko05), 15 *2* (1982De43), 13.3 *4* (1983Ha06), and 14.5 *3* and 14.2 *10* (1991Mi15) all from γ(t) measurements in ^{87}Mo decay.
31.56[#] *6*	(9/2$^+$)		A	
786.52[#] *19*	(11/2$^+$)		A	
864.54[#] *9*	(13/2$^+$)	14 ps *4*	A	
1773.00[#] *14*	(15/2$^+$)		A	
1863.57[#] *10*	(17/2$^+$)	14 ps *4*	A	
1969.83[@] *14*	(15/2)		A	
2283.70[@] *12*	(17/2)		A	
2695.98[@] *13*	(19/2)		A	
2742.17[#] *12*	(21/2$^+$)	1.2 ps *5*	A	
2963.3 *16*	(21/2$^+$)		A	
3134.98[@] *13*	(21/2)		A	
3382.62[#] *13*	(23/2$^+$)		A	
3600.34[#] *13*	(25/2$^+$)	1.1 ps *5*	A	
3618.75[@] *14*	(23/2)		A	
4161.35[@] *16*	(25/2)		A	
4384.82[#] *17*	(27/2$^+$)		A	
4550.72[#] *16*	(29/2$^+$)		A	
4713.09[@] *18*	(27/2)		A	
5253.77[@] *20*	(29/2)		A	
5302.51[#] *21*	(31/2$^+$)		A	
5670.12[#] *19*	(33/2$^+$)	0.46 ps *7*	A	
5857.67[@] *23*	(31/2)		A	
6368.35[@] *23*	(33/2)		A	
6945.82[#] *21*	(37/2$^+$)	0.24 ps *7*	A	
8354.95[#] *24*	(41/2$^+$)	<0.3 ps	A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{87}Mo Levels (continued)

E(level)	J^{π}[†]	XREF
10004.4[#] *3*	(45/2$^+$)	A
11838.4[#] *7*	(49/2$^+$)	A

[†] From γ-ray multipolarities, decay patterns, and expected band structure as deduced in ^{58}Ni(^{32}S,2pn) and ^{40}Ca(^{50}Cr,2pn) study (1991Wi15).
[‡] From recoil distance Doppler shift method and Doppler-shifted line-shape data (1991Wi15), unless noted otherwise.
[#] Band(A): yrast band based on ground state.
[@] Band(B): second band.

Adopted Levels, Gammas (continued)

γ(^{87}Mo)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	δ	α[#]	Comments
31.56	(9/2$^+$)	31.55 *6*	100	0.0	(7/2$^+$)	M1+E2	0.27 *+18−13*	13.6 *48*	α(K)=6.08 *10*; α(L)=0.736 *12*; α(M)=0.1319 *20* α(N)=0.0199 *3*; α(O)=0.001085 *17* α: Symmetrized from α(exp) = 11.5 *+69−31* from intensity balance in ^{58}Ni(^{32}S,2pn). Mult.,δ: From α(exp).
786.52	(11/2$^+$)	755.3 *4*		31.56	(9/2$^+$)				
		787.1 *4*		0.0	(7/2$^+$)				
864.54	(13/2$^+$)	832.95 *6*	100	31.56	(9/2$^+$)	E2		1.19×10^{-3} *2*	B(E2)(W.u.)=4.4 *+18−10* α(K)=0.001046 *15*; α(L)=0.0001200 *17*; α(M)=2.14×10^{-5} *3* α(N)=3.25×10^{-6} *5*; α(O)=1.79×10^{-7} *3*
1773.00	(15/2$^+$)	907.7 *2*		864.54	(13/2$^+$)				
		986.7 *2*		786.52	(11/2$^+$)				
1863.57	(17/2$^+$)	999.12 *6*	100	864.54	(13/2$^+$)	E2		7.74×10^{-4} *11*	B(E2)(W.u.)=1.8 *+7−4* α(K)=0.000681 *10*; α(L)=7.72×10^{-5} *11*; α(M)=1.377×10^{-5} *20* α(N)=2.09×10^{-6} *3*; α(O)=1.168×10^{-7} *17*
1969.83	(15/2)	1104.1 *3*	100	864.54	(13/2$^+$)				
2283.70	(17/2)	313.76 *9*	13.0 *22*	1969.83	(15/2)	D			
		420.22 *6*	42 *3*	1863.57	(17/2$^+$)				
		510.54 *11*	100 *20*	1773.00	(15/2$^+$)	(D)			
2695.98	(19/2)	412.23 *7*	100 *8*	2283.70	(17/2)	D			
		832.7[@] *5*	2 *2*	1863.57	(17/2$^+$)				
2742.17	(21/2$^+$)	878.60 *6*	100	1863.57	(17/2$^+$)	E2		1.05×10^{-3} *2*	B(E2)(W.u.)=39 *+28−11* α(K)=0.000919 *13*; α(L)=0.0001051 *15*; α(M)=1.88×10^{-5} *3* α(N)=2.84×10^{-6} *4*; α(O)=1.574×10^{-7} *22*
2963.3	(21/2$^+$)	1099.7 *1*	100	1863.57	(17/2$^+$)				
3134.98	(21/2)	439.05 *9*	54 *7*	2695.98	(19/2)				
		851.34 *8*	100 *9*	2283.70	(17/2)	E2		1.13×10^{-3} *2*	α(K)=0.000992 *14*; α(L)=0.0001136 *16*; α(M)=2.03×10^{-5} *3* α(N)=3.07×10^{-6} *5*; α(O)=1.697×10^{-7} *24*
3382.62	(23/2$^+$)	640.51 *7*	100	2742.17	(21/2$^+$)	D			
3600.34	(25/2$^+$)	217.78 *7*	22 *3*	3382.62	(23/2$^+$)	D(+Q)			
		858.11 *6*	100 *6*	2742.17	(21/2$^+$)	E2		1.11×10^{-3} *2*	B(E2)(W.u.)=40 *+33−13* α(K)=0.000973 *14*; α(L)=0.0001114 *16*; α(M)=1.99×10^{-5} *3* α(N)=3.01×10^{-6} *5*; α(O)=1.665×10^{-7} *24*
3618.75	(23/2)	483.81 *8*	50 *12*	3134.98	(21/2)				
		922.63 *9*	100 *19*	2695.98	(19/2)				
4161.35	(25/2)	542.27 *20*	52 *19*	3618.75	(23/2)				I_γ: Doublet with a 540 keV transition in ^{84}Zr, 1991Wi15.

$^{87}_{42}Mo_{45}$-3

Adopted Levels, Gammas (continued)

γ(^{87}Mo) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
4161.35	(25/2)	1026.49 *11*	100 *20*	3134.98	(21/2)			
4384.82	(27/2$^+$)	784.46 *14*	100	3600.34	(25/2$^+$)			
4550.72	(29/2$^+$)	165.87 *15*	24 *4*	4384.82	(27/2$^+$)	D		
		950.39 *11*	100 *9*	3600.34	(25/2$^+$)	E2	8.69×10^{-4} *13*	α(K)=0.000764 *11*; α(L)=8.69×10^{-5} *13*; α(M)=1.550×10^{-5} *22* α(N)=2.35×10^{-6} *4*; α(O)=1.309×10^{-7} *19*
4713.09	(27/2)	551.72 *20*	72 *26*	4161.35	(25/2)			
		1094.28 *15*	100 *38*	3618.75	(23/2)			
5253.77	(29/2)	540.57 *20*	75 *28*	4713.09	(27/2)			I_γ: Doublet with a 540 keV transition in ^{84}Zr, 1991Wi15.
		1092.48 *15*	100 *41*	4161.35	(25/2)			
5302.51	(31/2$^+$)	751.9 *8*	100	4550.72	(29/2$^+$)			
5670.12	(33/2$^+$)	367.61 *9*	23 *3*	5302.51	(31/2$^+$)	D(+Q)		
		1119.39 *9*	100 *5*	4550.72	(29/2$^+$)	(E2)	6.01×10^{-4} *9*	B(E2)(W.u.)=25 *5* α(K)=0.000528 *8*; α(L)=5.95×10^{-5} *9*; α(M)=1.062×10^{-5} *15* α(N)=1.614×10^{-6} *23*; α(O)=9.07×10^{-8} *13*; α(IPF)=1.130×10^{-6} *17*
5857.67	(31/2)	1144.57 *15*	100	4713.09	(27/2)			
6368.35	(33/2)	1114.57 *12*	100	5253.77	(29/2)			
6945.82	(37/2$^+$)	1275.69 *9*	100	5670.12	(33/2$^+$)	(E2)	4.74×10^{-4} *7*	B(E2)(W.u.)=30 *+13−6* α(K)=0.000399 *6*; α(L)=4.47×10^{-5} *7*; α(M)=7.98×10^{-6} *12* α(N)=1.214×10^{-6} *17*; α(O)=6.86×10^{-8} *10*; α(IPF)=2.10×10^{-5} *3*
8354.95	(41/2$^+$)	1409.12 *11*	100	6945.82	(37/2$^+$)	(E2)	4.23×10^{-4} *6*	α(K)=0.000325 *5*; α(L)=3.63×10^{-5} *5*; α(M)=6.47×10^{-6} *9* α(N)=9.85×10^{-7} *14*; α(O)=5.60×10^{-8} *8*; α(IPF)=5.34×10^{-5} *8*
10004.4	(45/2$^+$)	1649.41 *11*	100	8354.95	(41/2$^+$)			
11838.4	(49/2$^+$)	1834.0 *6*	100	10004.4	(45/2$^+$)			

[†] Unplaced γ′s are not included here; see ^{58}Ni(^{32}S,2pn) and ^{40}Ca(^{50}Cr,2pn) data.
[‡] Assigned by evaluator from angular distributions and authors′ comments in ^{58}Ni(^{32}S,2pn) and ^{40}Ca(^{50}Cr,2pn) study (1991Wi15).
[#] Additional information 1.
[@] Placement of transition in the level scheme is uncertain.

$^{87}_{42}Mo_{45}$-4

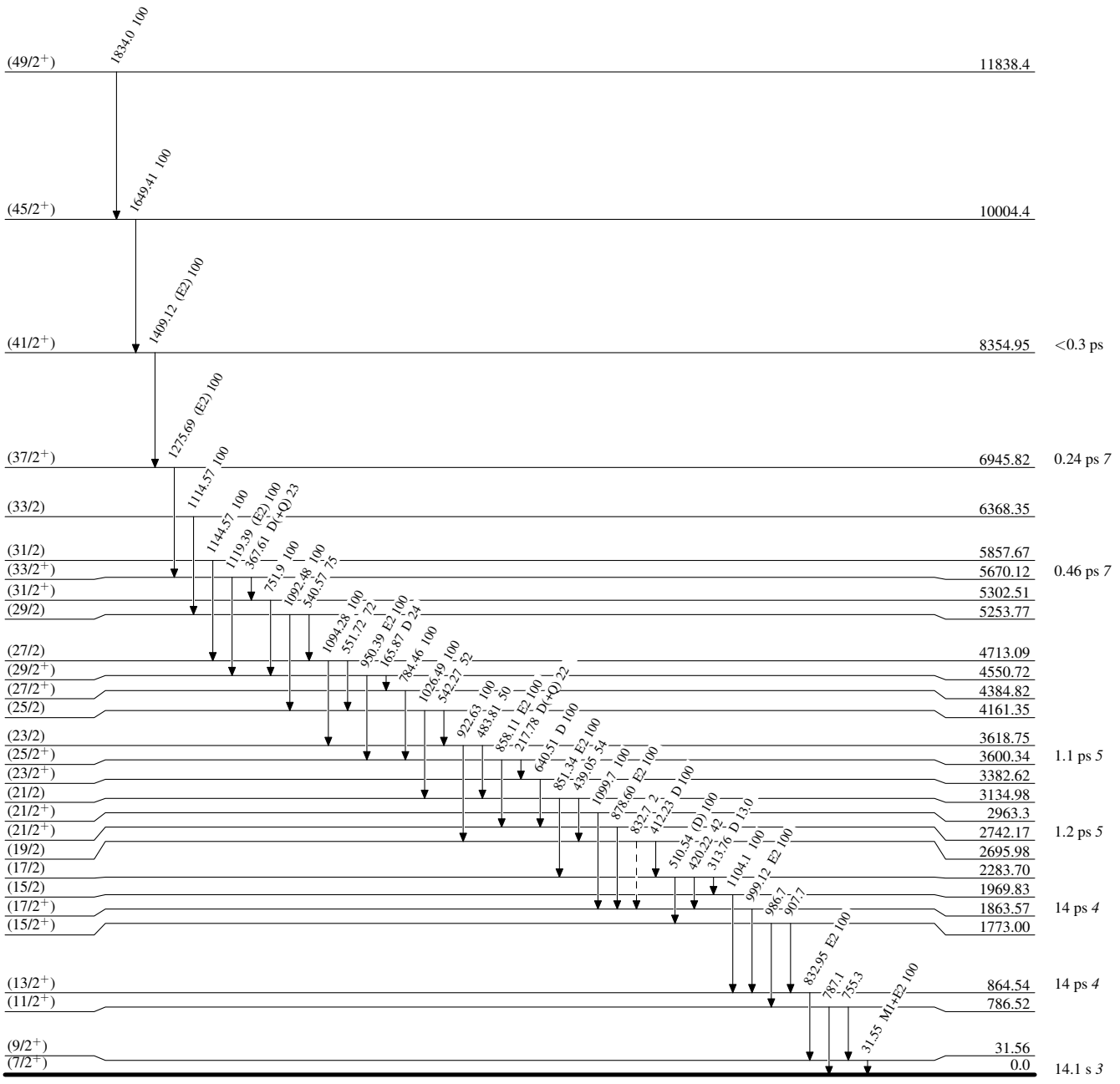
Adopted Levels, Gammas

Legend

Level Scheme

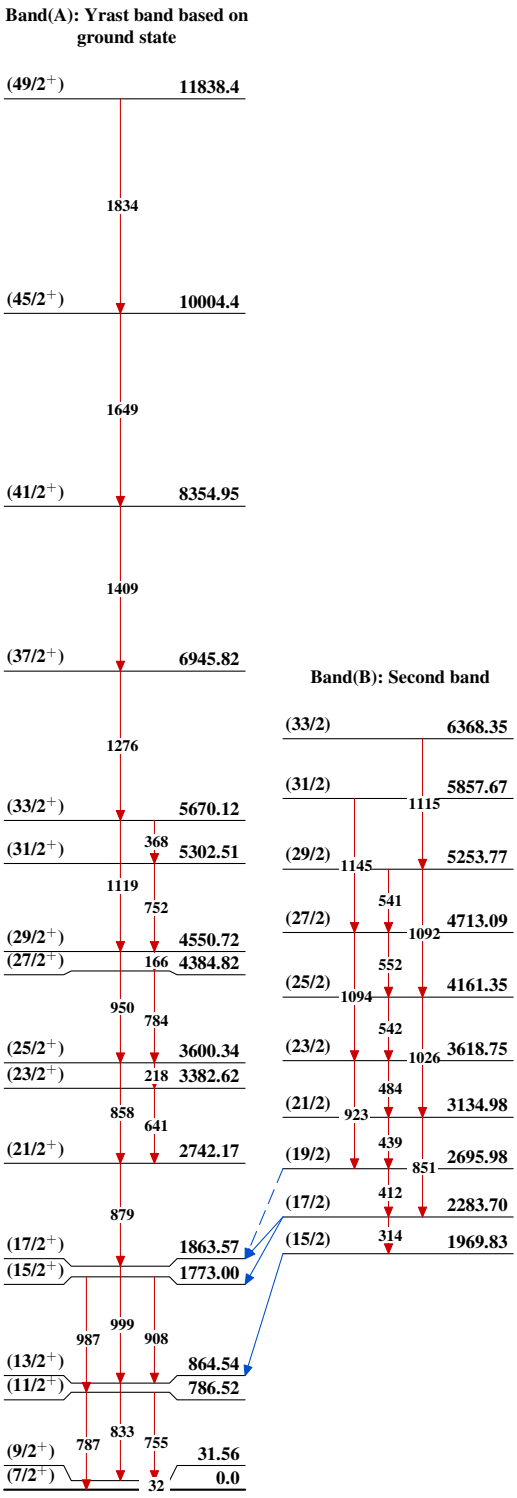
Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{87}_{42}Mo_{45}$

Adopted Levels, Gammas



$^{87}_{42}Mo_{45}$