^{92}Mo(^{46}Ti,3pγ) 1988Wa01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Alexander A. Rodionov And Yuri L. Khazov	NDS 109, 517 (2008)	22-Jan-2008

1988Wa01: ^{92}Mo(^{46}Ti,3pγ) E=210 MeV. Enriched target, measured Eγ, Iγ, $\gamma\gamma(\theta)$(DCO), $\gamma\gamma$ using an array of 12 BGO suppressed Ge detectors and 50 inner ball BGO detectors.
1987Wa02: ^{92}Mo(^{46}Ti,3pγ) E=210 MeV. Measured lifetime by Recoil-Distance Doppler Shift (RDDS) method. ^{135}Pm also produced in ^{92}Mo(^{50}Cr,3p$\alpha\gamma$) E=230 MeV.
1987Wa18: ^{106}Pd(^{34}S,p4nγ) E=152 MeV. Intensity of possible SD band≤2%.
Other: 1986LuZX: ^{107}Ag(^{32}S,2n2pγ) E=125-150 MeV. Measured γ, $\gamma\gamma$, $\gamma(\theta)$, $T_{1/2}$ by $\gamma\gamma$(t) and RDDS.

^{135}Pm Levels

E(level)‡	J$^\pi$#	$T_{1/2}$†	Comments
0.0+z@	(11/2⁻)		E(level): systematics (see figure 3 in 1993BrZU) suggest 11/2⁻ as g.s..
286.2+z@ *2*	(15/2⁻)	49 ps *2*	
799.0+z@ *3*	(19/2⁻)	4.2 ps *5*	
1456.3+z@ *4*	(23/2⁻)	1.7 ps *4*	
1990.7+z *9*	(21/2⁺)		
2204.6+z@ *4*	(27/2⁻)		
2393.4+z *12*	(25/2⁺)		
3008.6+z@ *6*	(31/2⁻)		
3854.8+z@ *7*	(35/2⁻)		
4752.6+z@ *8*	(39/2⁻)		
5716.3+z@ *9*	(43/2⁻)		
6747.1+z@ *12*	(47/2⁻)		

† RDDS (1987Wa02).
‡ From least-squares fit to Eγ's. Value of z=68.9+y in 'Adopted Levels.
# From $\gamma\gamma(\theta)$ (DCO) data and band assignments, assuming 11/2⁻ as the lowest populated state.
@ Band(A): $\pi h_{11/2}$ decoupled band, α=−1/2. first band crossing (backbend) is observed at h\'ω≈430-450 keV attributable (from cranked shell-model calculations) to the alignment of a pair of $h_{11/2}$ protons. The results are also consistent with the alignment of a pair of $h_{11/2}$ neutrons, but from systematics proton alignment is expected.

γ(^{135}Pm)

DCO values correspond to gates on ΔJ=2, quadrupole transitions. Expected values are ≥1 for ΔJ=2, quadrupole and <1 for ΔJ=1, dipole transitions.

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.	α@	I$_{(\gamma+ce)}$	Comments
286.2 *2*	94	286.2+z	(15/2⁻)	0.0+z	(11/2⁻)	E2#	0.0629	100	ce(K)/(γ+ce)=0.0462 *7*; ce(L)/(γ+ce)=0.01018 *15*; ce(M)/(γ+ce)=0.00225 *4*; ce(N+)/(γ+ce)=0.000570 *9* ce(N)/(γ+ce)=0.000498 *8*; ce(O)/(γ+ce)=6.91×10^{-5} *10*; ce(P)/(γ+ce)=2.49×10^{-6} *4* I$_\gamma$: from I(γ+ce)=100 (1988Wa01) and mult(286γ)=E2. R(DCO)=1.30 *4*.

Continued on next page (footnotes at end of table)

^{92}Mo(^{46}Ti,3pγ) 1988Wa01 (continued)

γ(^{135}Pm) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α[@]	Comments
402.7 *8*	6.0 *3*	2393.4+z	(25/2$^+$)	1990.7+z	(21/2$^+$)			Contaminated peak.
512.8 *2*	100 *1*	799.0+z	(19/2$^-$)	286.2+z	(15/2$^-$)	E2[#]	0.01149	α(K)=0.00949 *14*; α(L)=0.001572 *22*; α(M)=0.000341 *5*; α(N+..)=8.76×10^{-5} *13* α(N)=7.60×10^{-5} *11*; α(O)=1.101×10^{-5} *16*; α(P)=5.52×10^{-7} *8* R(DCO)=1.33 *4*.
657.3 *2*	86.9 *13*	1456.3+z	(23/2$^-$)	799.0+z	(19/2$^-$)	E2[#]	0.00611	α(K)=0.00512 *8*; α(L)=0.000782 *11*; α(M)=0.0001684 *24*; α(N+..)=4.35×10^{-5} *7* α(N)=3.77×10^{-5} *6*; α(O)=5.53×10^{-6} *8*; α(P)=3.03×10^{-7} *5* R(DCO)=1.49 *9*.
748.3 *2*	65.2 *12*	2204.6+z	(27/2$^-$)	1456.3+z	(23/2$^-$)	Q[†]		R(DCO)=1.46 *10*.
804.0 *4*	56.3 *15*	3008.6+z	(31/2$^-$)	2204.6+z	(27/2$^-$)	Q[†]		R(DCO)=1.41 *10*.
846.2 *4*	47.8 *14*	3854.8+z	(35/2$^-$)	3008.6+z	(31/2$^-$)	Q[†]		R(DCO)=1.51 *10*.
897.8 *4*	32.1 *14*	4752.6+z	(39/2$^-$)	3854.8+z	(35/2$^-$)	Q[†]		R(DCO)=1.48 *15*.
933.6 *8*	7.0 *8*	2393.4+z	(25/2$^+$)	1456.3+z	(23/2$^-$)	D[‡]		E_γ: the quoted energy seems to be low by≈3.5 keV. Corresponding energy in ^{116}Sn(^{24}Mg,p4nγ) is 938.4 *3* (1987Be22). Inspection of figure 1 in 1987Be22 and level energy difference suggest 937. R(DCO)=0.83 *25*.
963.7 *4*	17.1 *9*	5716.3+z	(43/2$^-$)	4752.6+z	(39/2$^-$)	Q[†]		R(DCO)=1.39 *27*.
1030.8 *8*	9.9 *15*	6747.1+z	(47/2$^-$)	5716.3+z	(43/2$^-$)	Q[†]		R(DCO)=1.60 *35*.
1191.7 *8*	6.0 *11*	1990.7+z	(21/2$^+$)	799.0+z	(19/2$^-$)	D[‡]		R(DCO)=0.78 *28*.

[†] R(DCO) ratio indicates ΔJ=2, stretched quadrupole (E2).

[‡] R(DCO) ratio indicates ΔJ=1, dipole.

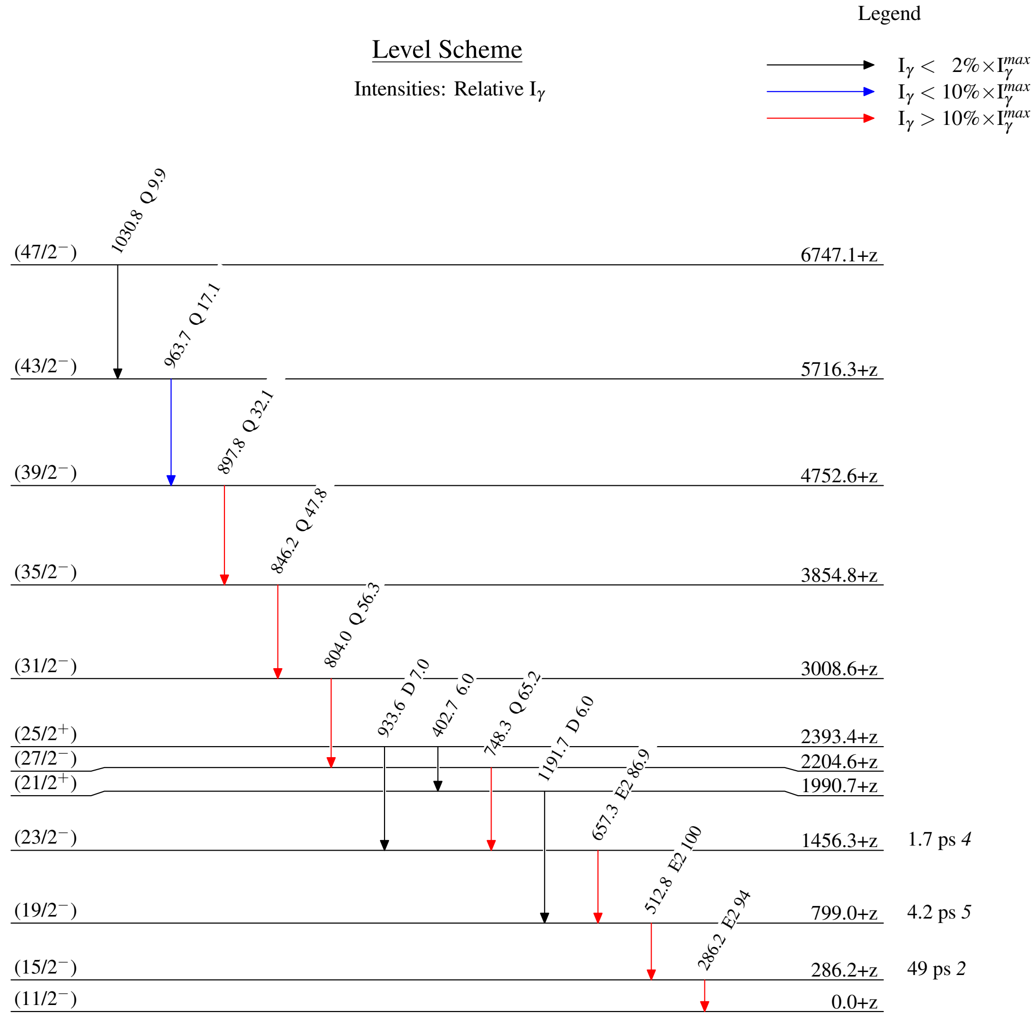
[#] R(DCO) (indicates ΔJ=2) and RUL(for E2 and M2).

[@] 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.

^{92}Mo(^{46}Ti,3pγ) 1988Wa01

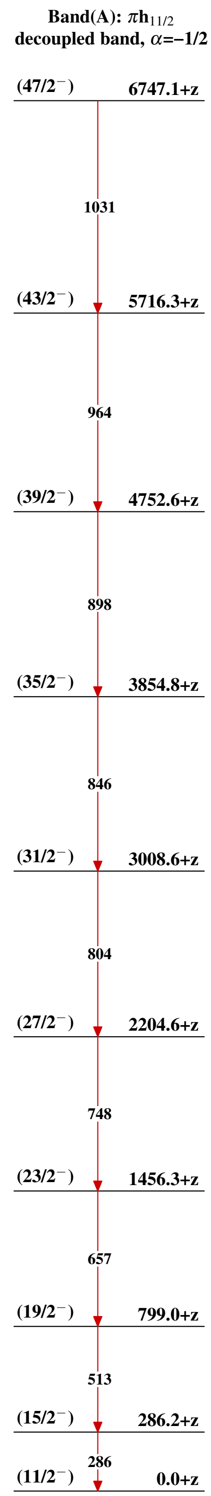
Level Scheme

Intensities: Relative I_γ



$^{135}_{61}Pm_{74}$

$^{92}Mo(^{46}Ti,3p\gamma)$ 1988Wa01



$^{135}_{61}Pm_{74}$