Coulomb excitation 1975Ba02,1975An17

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 111, 525 (2010)	19-Nov-2009

^{97}Mo Levels

1975Ba02: (α,$\alpha'\gamma$) Eα=6-10 MeV, (^{16}O,^{16}Oγ) E(^{16}O)=43.4 MeV;Ge(Li) detectors, resolution 2.0 keV at 1.33 MeV. Measured Eγ, Iγ, $\gamma(\theta)$, excit. (supersedes data published in 1972Ba27).
1974An17: (alpha.alpha'γ) Eα=8.8 MeV, (^{12}C,^{12}C'γ) E(^{12}C)=33 MeV;Ge(Li) detector. Measured Iγ, $\gamma\gamma$.
1974Er01, 1974Le34: (^{14}N,^{14}N'γ) E(^{14}N)=40.1 MeV. Measured $T_{1/2}$ with DSA.
1975BoYF: (^{35}Cl,^{35}Cl'γ); measured $T_{1/2}$ with Doppler shift attenuation.
The B(E2)↑ given are the weighted averages of values cited in 1975Ba02 and 1975An17.

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	Comments
0.0	5/2$^+$		
480.9	3/2$^+$	12.9 ps *19*	B(E2)↑=0.0204 *10* J$^\pi$: from (480.9γ)(θ). $T_{1/2}$: other: 8.5 ps *4* (1975BoYF, unpublished measurement, quoted in 1975Ba02),>2.4 ps (1974Er01).
658.2	7/2$^+$	2.0 ps *5*	B(E2)↑=0.00041 *6* $T_{1/2}$: from 1975BoYF.
679.6	1/2$^+$	28.9 ps *19*	B(E2)↑=0.0045 *3* J$^\pi$: from (680.6γ)(θ) isotropic. $T_{1/2}$: other:≥2 ps (1974Er01).
719.2	5/2$^+$	10 ps *5*	B(E2)↑=0.0038 *3* J$^\pi$: (238.3γ)(θ) rules out 1/2 and 7/2. $T_{1/2}$: other:>0.7 ps (1974Er01). Alternate value of δ(719.3γ) gives $T_{1/2}$=57 ps *7*.
721.1	3/2$^+$	4 ps *+5−3*	B(E2)↑=0.00169 *15* J$^\pi$: from (721.1γ)(θ) fits J=3/2, 5/2 or 7/2. $T_{1/2}$: other:>0.7 ps (1974Er01). Alternate value of δ(721.1γ) gives $T_{1/2}$=98 ps *15*.
840.9?			B(E2)↑=0.00030 *7* B(E2) from 1975Ba02, level not seen by 1974An17.
888.1	1/2$^+$	2.7 ps *9*	B(E2)↑=0.00175 *17* J$^\pi$: (407.0γ)(θ) isotropic.
1024.6	7/2$^+$	0.55 ps *12*	B(E2)↑=0.0446 *22* J$^\pi$: only 7/2, 9/2 considered in fitting (1024.6γ)(θ). $T_{1/2}$: from 1974Er01. Other: 0.37 *26* ps (from B(E2)↑).
1092.6	3/2$^+$	1.3 ps *+16−7*	B(E2)↑=0.00337 *24* J$^\pi$: from (1092.6γ)(θ).
1116.7	9/2$^+$	1.20 ps *8*	B(E2)↑=0.044 *3* J$^\pi$: from (1116.7γ)(θ) (only J=7/2, 9/2 considered). $T_{1/2}$: other: 1.0 *3* ps (1974Er01).
1268.6	7/2$^+$	0.53 ps *20*	B(E2)↑=0.0093 *14* $T_{1/2}$: from 1974Er01. Other:<1.5 ps (from B(E2)↑, $T_{1/2}$ for pure E2 g.s. transition).
1284.6	3/2$^+$,5/2$^+$	0.7 ps *+5−6*	B(E2)↑=0.0034 *8*
1515.5	9/2$^+$	1.48 ps *23*	B(E2)↑=0.0055 *7* J$^\pi$: 9/2 from (1515.6γ)(θ).

[†] From 1975Ba02.
[‡] Based on arguments given In the table − same values As In Adopted Levels, Gammas dataset.
[#] Deduced from B(E2)↑ by the evaluator based on the adopted level scheme, unless otherwise noted.

Coulomb excitation 1975Ba02,1975An17 (continued)

$\gamma(^{97}Mo)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[@]	Comments
480.9	$3/2^+$	480.9 *1*	100	0.0	$5/2^+$	M1+E2	+0.47 *3*	0.00445	δ: or δ=+4.4 *4* (which would lead to $T_{1/2}$(level)=68 ps, in disagreement with the measured $T_{1/2}$ of 1975BoYF).
658.2	$7/2^+$	658.2 *1*	100	0.0	$5/2^+$	M1+E2	−0.04 *1*	0.00207	δ: deduced from $T_{1/2}$ and B(E2)↑.
679.6	$1/2^+$	679.6 *1*	100	0.0	$5/2^+$	E2		0.00203	
719.2	$5/2^+$	238.3 *2*	32 *3*	480.9	$3/2^+$	M1+E2	−0.06 *6*	0.0245 *3*	δ: or δ=−2.9 *+6−4*.
		719.3 *3*	100	0.0	$5/2^+$	M1+E2	−0.47[#] *10*	0.00170	δ: or δ=+10.5 *+40−45*.
721.1	$3/2^+$	721.1 *4*	100	0.0	$5/2^+$	M1+E2	−0.19[#] *9*	0.00168	δ: or δ=−2.4 *+5−7*.
840.9?		840.9 *3*	100	0.0	$5/2^+$				
888.1	$1/2^+$	407.0 *1*	100	480.9	$3/2^+$	[M1]		0.00643	
		888.1 *3*	15 *2*	0.0	$5/2^+$	E2		0.00103	
1024.6	$7/2^+$	366.3 *1*	3.3 *1*	658.2	$7/2^+$	[M1]		0.00832	δ: +0.55 *+73−48*.
		543.8 *5*	0.36 *10*	480.9	$3/2^+$	E2		0.00375	
		1024.6 *2*	100	0.0	$5/2^+$	M1+E2	−0.54 *+14−24*		
1092.6	$3/2^+$	611.9 *3*	11 *2*	480.9	$3/2^+$	[M1]		0.00245	
		1092.6 *3*	100	0.0	$5/2^+$	M1+E2	+0.51 *+24−15*		
1116.7	$9/2^+$	397.3 *3*	1.2 *2*	719.2	$5/2^+$	E2		0.00974	δ: δ(M3/E2)=+0.05 *17*.
		458.5 *3*	1.9 *2*	658.2	$7/2^+$	[M1]		0.00482	
		1116.7 *2*	100	0.0	$5/2^+$	E2			δ: δ(M3/E2)=0.00 *1*.
1268.6	$7/2^+$	549.5 *3*	48 *4*	719.2	$5/2^+$				
		1268.8 *4*	100	0.0	$5/2^+$				δ: from adopted $T_{1/2}$ and B(E2)↑ δ=0.8 *3*.
1284.6	$3/2^+$,$5/2^+$	803.5 *3*	100	480.9	$3/2^+$				
		1284.6 *3*	75 *25*	0.0	$5/2^+$	M1+E2	−0.8 *+3−4*		
1515.5	$9/2^+$	857.3 *4*	40 *10*	658.2	$7/2^+$	M1+E2	+0.40 *10*	0.00114	δ: or δ=+4.7 *+30−15*.
		1515.5 *3*	100	0.0	$5/2^+$	E2			δ: δ(M3/E2)=−0.05 *15*.

[†] From 1975Ba02. The data in 1975An17 is in good agreement.

[‡] Deduced from $\gamma(\theta)$ of 1975Ba02.

[#] Although the alternate value for δ given in the comment cannot be ruled out, the lower value is adopted as the more likely one for this mass region.

[@] 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.

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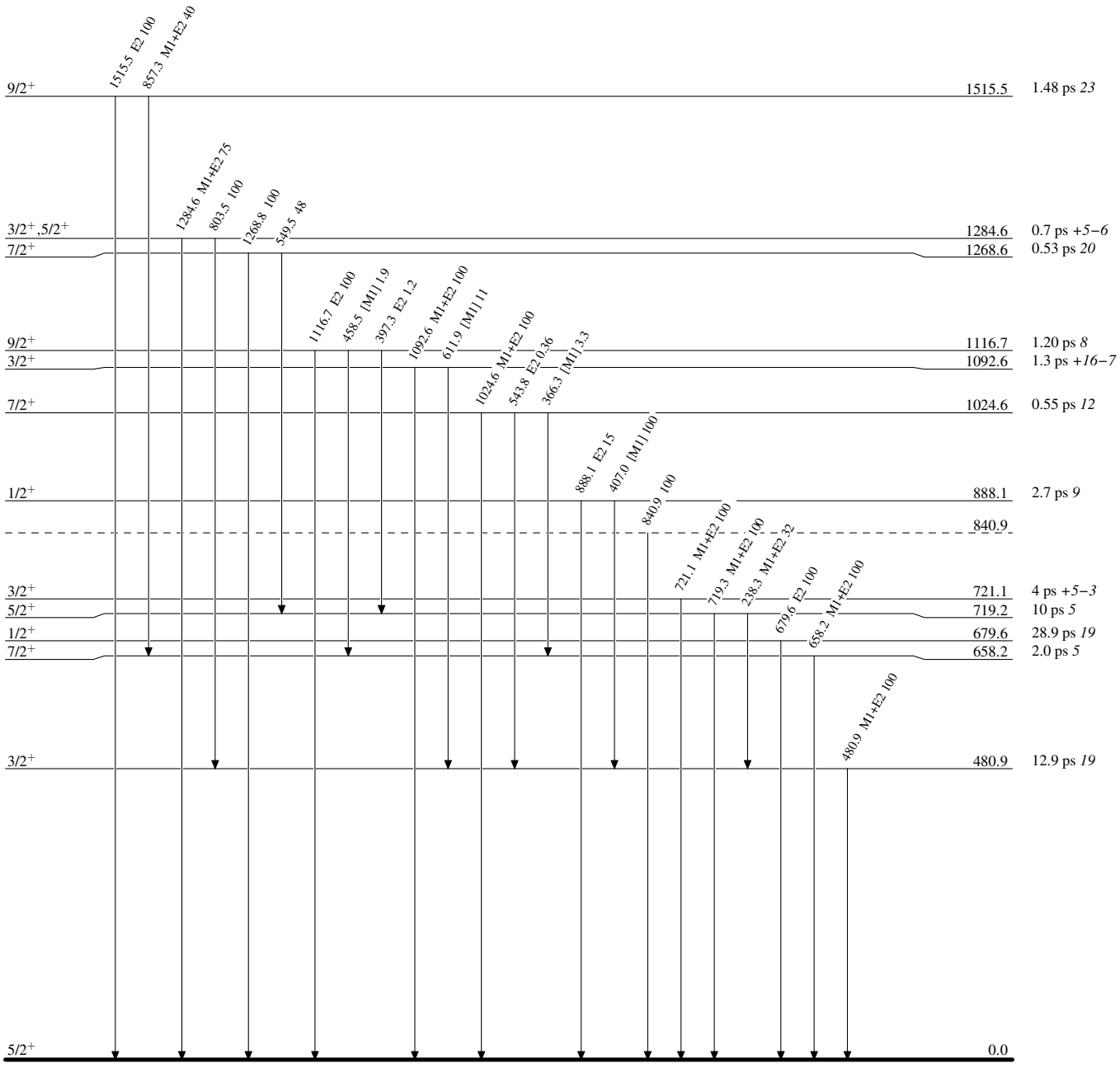
Level Scheme

Intensities: Relative photon branching from each level



$^{97}_{42}Mo_{55}$