Coulomb excitation 1989Os04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	V. S. Shirley	NDS 75,377 (1995)	1-Oct-1993

1958Ch36: E(p)=3.7 MeV; 1959De29: E(p)=4 MeV; 1962Go23: E(p)=3 MeV. 1963El06: E(p)≈4 MeV, E(d)≈4 MeV.
1980An43: E(α)=13.5 MeV, E(^{12}C)=47.3 MeV, E(^{14}N)=57 MeV, E(^{16}O)=56 MeV.
1963Al30: E(^{14}N)=52 MeV.
1966Bo16: E(^{16}O)≈45 MeV; 1966Pa19: E(^{16}O)=30-50 MeV.
1989Os04: E(^{58}Ni)=250 MeV.
Level scheme and γ-ray data for 5/2[512] g.s. band are from 1989Os04: E(^{58}Ni)=250 MeV, enriched (92.1%) metallic Yb targets; measured Eγ, Iγ (anti-Compton spect), $\gamma\gamma$ coin, γ-ray angular distributions (7 angles between 0° and 90°); used rotating shell model to interpret structure.
Data for other levels are from 1966Pa19: E(^{16}O)=30-50 MeV, enriched (95%) metallic Yb targets; measured Eγ, Iγ, particle-γ coin (Ge(Li), NaI(Tl)). Reference citations are given with data from other sources. Others: 1955He64, 1957El10, 1958Ch36, 1963Al30, 1966Bo16, 1966Pa19, 1970Ga19.

^{173}Yb Levels

E(level)	J$^\pi$[†]	T$_{1/2}$[‡]	Comments
0.0[#]	5/2$^-$	stable	
78.50[#] *8*	7/2$^-$	46 ps *5*	B(E2)↑=2.90 *15* (1963El06) T$_{1/2}$: adopted value; T$_{1/2}$=51 ps *5* from B(E2) and adopted properties for 78.5γ. B(E2)↑: other: 1959De29.
179.30[#] *8*	9/2$^-$	32 ps *4*	B(E2)↑=0.90 *10* (1963El06) T$_{1/2}$: from B(E2) and adopted properties for 179.3γ. B(E2)↑: other: 1959De29.
301.70[#] *9*	11/2$^-$	16.7 ps *15*	
350.6 *10*	7/2$^+$	0.45 ns *2*	J$^\pi$: 7/2$^+$ 7/2[633] state (adopted value). T$_{1/2}$: adopted value.
445.7[#] *1*	13/2$^-$	12.2 ps *11*	
610.6[#] *1*	15/2$^-$	7.3 ps *6*	
635.9 *1*	7/2$^-$	8.0 ps *26*	B(E2)↑=0.012 *3* (1980An43) B(E2)↑: other: 1963Al30. J$^\pi$: 7/2$^-$ 7/2[514] state (adopted value). T$_{1/2}$: from B(E2) and adopted properties for 636.1γ.
796.2[#] *1*	17/2$^-$	4.3 ps *4*	
1001.9[#] *2*	19/2$^-$	2.6 ps *2*	
1227.1[#] *2*	21/2$^-$	1.81 ps *16*	
1471.7[#] *2*	23/2$^-$	1.15 ps *17*	
1736.0[#] *3*	25/2$^-$	0.60 ps *5*	
2018.0[#] *3*	(27/2$^-$)		

[†] From γ-ray multipolarities and cascade positions of coincident γ's, except where noted.
[‡] Doppler-shift recoil-distance (1989Os04), except where noted.
[#] 5/2[512] band member.

Coulomb excitation 1989Os04 (continued)

$\gamma(^{173}Yb)$

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
78.5 *1*	100 *2*	78.50	7/2$^-$	0.0	5/2$^-$	M1+E2	−0.161 *22*	δ: from $\gamma\gamma(\theta)$ (1966As02).
100.8 *1*	58.4 *11*	179.30	9/2$^-$	78.50	7/2$^-$	M1+E2	−0.235 *21*	δ: from $\gamma\gamma(\theta)$ (1966As02). Other value: 0.22 *6* ($\gamma(\theta)$, 1959De29).
122.4 *1*	22.7 *4*	301.70	11/2$^-$	179.30	9/2$^-$	M1+E2	−0.22 *6*	
144.0 *1*	11.3 *2*	445.7	13/2$^-$	301.70	11/2$^-$	M1+E2	−0.15 *4*	
164.9 *1*	5.30 *11*	610.6	15/2$^-$	445.7	13/2$^-$	M1+E2	−0.12 *4*	
179.3 *1*	16.1 *3*	179.30	9/2$^-$	0.0	5/2$^-$	E2		
185.6 *1*	1.78 *3*	796.2	17/2$^-$	610.6	15/2$^-$	M1+E2	−0.15 *4*	
205.7 *1*	0.77 *3*	1001.9	19/2$^-$	796.2	17/2$^-$	M1+E2	−0.20 *4*	
223.2 *1*	14.6 *3*	301.70	11/2$^-$	78.50	7/2$^-$	E2		
225.2 *1*	0.238 *11*	1227.1	21/2$^-$	1001.9	19/2$^-$	M1+E2	−0.18 *7*	
244.6 *1*	0.108 *16*	1471.7	23/2$^-$	1227.1	21/2$^-$	M1(+E2)	−0.18 *18*	
264.3 *4*		1736.0	25/2$^-$	1471.7	23/2$^-$			E_γ: from energy difference between initial and final states (transition shown on level scheme, but not listed in table).
266.4 *1*	12.1 *2*	445.7	13/2$^-$	179.30	9/2$^-$	E2		
272.7 *14*		350.6	7/2$^+$	78.50	7/2$^-$			
286.0 *14*	@	635.9	7/2$^-$	350.6	7/2$^+$			
308.9 *1*	8.11 *16*	610.6	15/2$^-$	301.70	11/2$^-$	E2		
350.5 *1*	4.96 *15*	796.2	17/2$^-$	445.7	13/2$^-$	E2		
391.3 *1*	2.99 *6*	1001.9	19/2$^-$	610.6	15/2$^-$	E2		
430.9 *1*	1.47 *3*	1227.1	21/2$^-$	796.2	17/2$^-$	E2		
469.8 *1*	0.70 *3*	1471.7	23/2$^-$	1001.9	19/2$^-$	E2		
508.9 *3*	0.4 *2*	1736.0	25/2$^-$	1227.1	21/2$^-$	E2		
546.3 *3*		2018.0	(27/2$^-$)	1471.7	23/2$^-$			
557.497 *25*	@	635.9	7/2$^-$	78.50	7/2$^-$			E_γ: from ^{173}Lu ε decay.
637.0 *14*	@	635.9	7/2$^-$	0.0	5/2$^-$			

[†] Arbitrary units relative to Iγ(78.5γ)=100.

[‡] Inferred from γ-ray angular distributions (1989Os04); quadrupole transitions, assumed to be stretched E2, are based on positive A_2. Mixed transitions, assumed to be M1+E2, are based on negative A_2 and placement relative to cascading E2 γ's.

[#] From γ-ray angular distributions (1989Os04), except where noted.

[@] Iγ(637.0γ):Iγ(557.5γ):Iγ(286.0γ)=10 *1*:3.7 *6*:3.7 *4*.

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Level Scheme

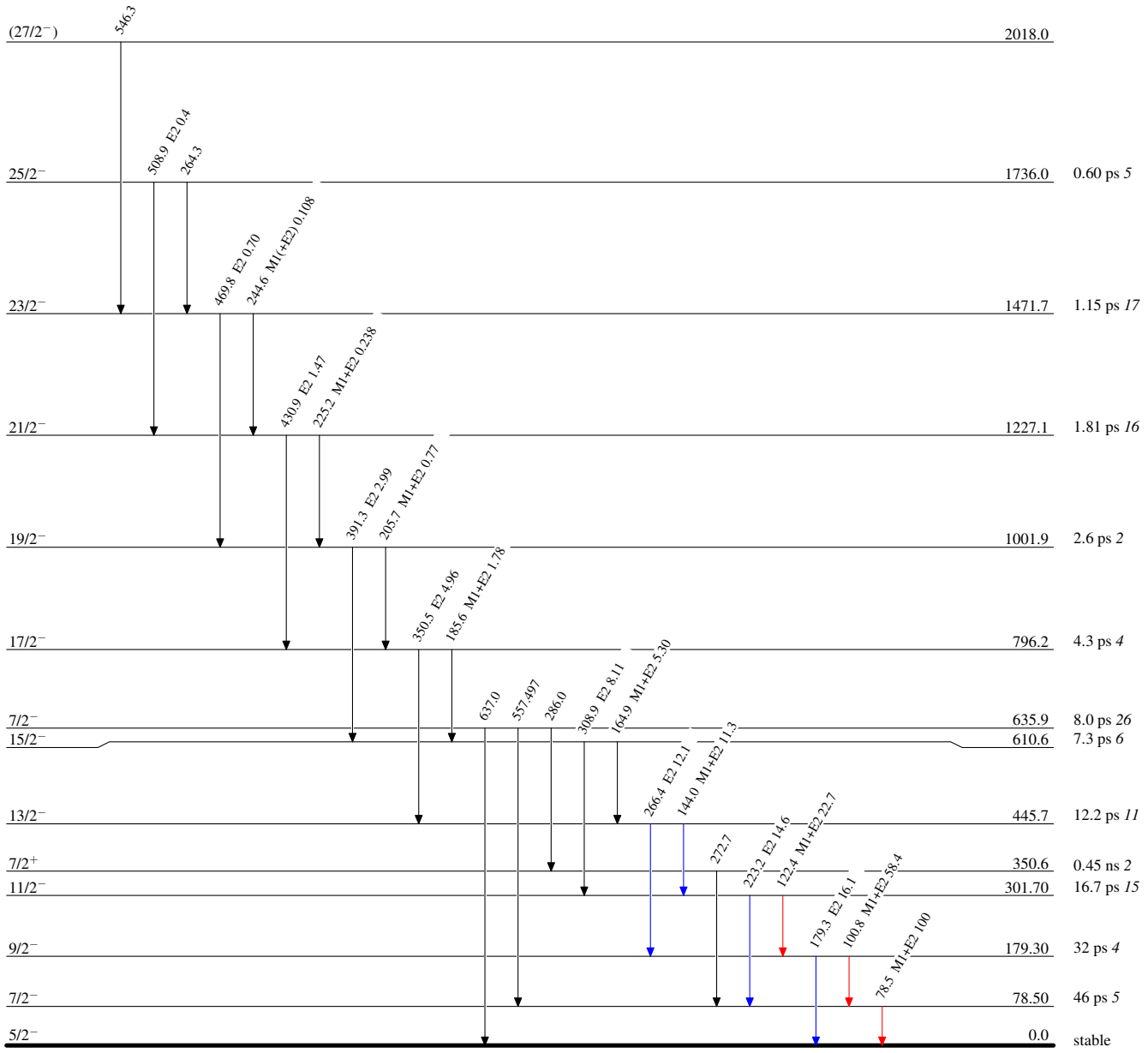
Intensities: Relative Iγ for E(^{58}Ni)=250 MeV

Legend

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

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

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



$^{173}_{70}Yb_{103}$