Coulomb excitation

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. R. Bhat	NDS 85, 415 (1998)	24-Sep-1998

1989Ph01: measured charge dependence of $T_{1/2}$(14.4).
1962Ri09: (^{20}Ne,^{20}Ne′γ). E=8− 15 MeV. Measured thick-target Iγ(235°) and γ(0°,90°); NaI. Obtained εB(E2)↑.
1969Ga25: (^{14}n,^{14}n′γ). E=31.3 MeV. Measured γ′s; Ge(Li). Deduced B(E2)↑.
1969Sp05: (α,α′γ): E= 3.15 MeV; measured γ(−90°−135°); Ge(Li). (^{16}O,^{16}O′γ): E=28.3 MeV; measured absolute Iγ; Ge(Li); deduced B(E2)↑. E=22.5, 28.3, and 34.1 MeV; measured γ′s; Ge(Li); obtained B(E2)↑(367)/B(E2)↑(136). E=25.0 MeV; obtained B(E2)↑(707)/B(E2)↑(136). E=25.0 MeV; measured $\gamma(\theta$,h). E=35.1 MeV; DSAM. E=14, 30 MeV; measured $\gamma(\theta$,h); obtained g-factor.
1964Th06: (α,α′γ): E=0.5-1.1 MeV; measured Coulomb excitation of the 14.4-keV level.
1960Fe06: (α,α′γ): E=1.9-2.5 MeV; measured Coulomb excitation of the 136-keV level; $\gamma(\theta)$, $T_{1/2}$.
Others: 1984Pi07, 1970Ra51, and 1969Sp05.

^{57}Fe Levels

E(level)†	J$^\pi$†	$T_{1/2}$‡	Comments
0.0	1/2−		
14.4129 *6*	3/2−		B(E2)↑=0.00097 *15* (1964Th06) $T_{1/2}$: 100 ns 5 for a two-electron ion; 79 ns 6 for a total spin f=1 state of one-electron ion (1989Ph01).
136.4745 *12*	5/2−	8.6 ns *3*	g=+0.34 *5* (1969Sp05); B(E2)↑=0.041 *4* g,μ from $\omega\tau$=− 0.230 *6* if $T_{1/2}$= 8.8 ns. B(E2)↑: weighted av of 0.040 *6* (1969Sp05), 0.043 *5* (1960Fe06), 0.038 *6* (1962Ri09). Other: 0.026 *3* (1969Ga25). $T_{1/2}$: weighted av of pulsed beam measurements (NaI): 8.5 ns *4* (1969Ja18; E(^{16}O)=22.5 MeV), 8.8 ns *4* (1961Ho05; Eα=4 MeV), and 8.6 ns *8* (1960Fe06; Eα=2 MeV). Other: 9.0 ns *13* from B(E2)↑.
366.761 *7*	3/2−	10 ps *2*	g=0.0 *4* (1969Sp05); B(E2)↑=0.040 *5* g: 1969Sp05 conclude that either the absolute value is <0.4 or that the effective field acting on the state is not constant during its lifetime. B(E2)↑: weighted av of 0.040 *7* (1969Sp05), and 0.040 *6* (1962Ri09). B(E2)↑(367)/B(E2)↑(136)=1.00 *6* (1969Sp05) agrees with this value. Other: 0.022 *5* (1969Ga25).
706.428 *16*	5/2−	4.1 ps *11*	B(E2)↑=0.0125 *12* B(E2)↑: weighted av of 0.013 *2* (1969Sp05), 0.011 *3* (1969Ga25), and 0.0127 *17* derived from B(E2)↑(707)/B(E2)↑(136)=0.31 *3* (1969Sp05).

† From Adopted Levels.
‡ From DSAM (1969Sp05), except as noted.

γ(^{57}Fe)

E_i(level)	J_i^π	E_γ†	I_γ†‡	E_f	J_f^π	Mult.#	δ#	Comments
14.4129	3/2−	14.4129 *6*	100	0.0	1/2−			
136.4745	5/2−	122.0614 *4*	100 *10*	14.4129	3/2−	M1+E2	+0.120 *2*	
		136.4743 *5*	12.0 *12*	0.0	1/2−	E2		
366.761	3/2−	230.29 *2*	9.2 *11*	136.4745	5/2−	D+Q		δ: + 0.07 *10* or - 12 *8*.
		352.36 *1*	100 *11*	14.4129	3/2−	D+Q		δ: - 0.02 *4* or 4.0 *5*.
		366.75 *1*	17.7 *20*	0.0	1/2−	D+Q	−0.6 *3*	δ: consistent with δ= 0.41 *5* from B(E2)↑ and $T_{1/2}$; inconsistent with results from ε decay.
706.428	5/2−	339.54 *18*	1.7 *3*	366.761	3/2−			
		569.92 *4*	11.0 *13*	136.4745	5/2−	D+Q	+2.0 *23*	

Continued on next page (footnotes at end of table)

Coulomb excitation (continued)

γ(^{57}Fe) (continued)

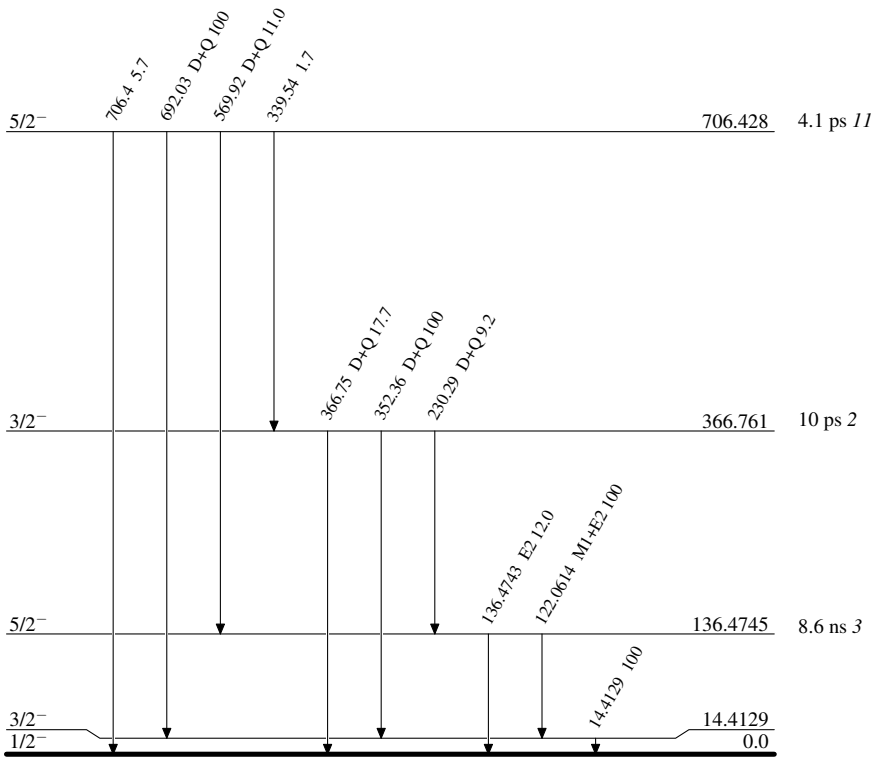
E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]	δ[#]
706.428	5/2$^-$	692.03 *2*	100 *11*	14.4129	3/2$^-$	D+Q	−0.8 *4*
		706.4 *2*	5.7 *24*	0.0	1/2$^-$		

[†] From adopted gammas.
[‡] Relative photon branching from each level.
[#] From γ(θ) (1969Sp05) and RUL where applicable.

Coulomb excitation

Level Scheme

Intensities: Relative photon branching from each level



$^{57}_{26}Fe_{31}$