^{56}Fe(p,n), (p,nγ) 1983Or02,1981Or04,1974Ba61

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huo Junde, Huo Su, Yang Dong	NDS 112, 1513 (2011)	29-Oct-2009

1973Sa11: E=5.5-8.4 MeV, measured γγ-coin, σ(E(p),Eγ), γ(θ).
1974Ba61: E=7.3 MeV, measured Eγ, Iγ, γ(θ), DSA.
1983Or02: E=17 MeV, 30-keV FWHM; measured σ(E(n),θ); IAS and DWBA analysis.
1981Or04: measured σ(E(n),θ); IAS and CCBA analyses.

^{56}Co Levels

E(level)[†]	Jπ[#]	$T_{1/2}$[‡]	Comments
0.0	4+[&]		
158.40 *6*	3+		Jπ: J=1,2,3 from γ(θ) and σ(E).
576.51 *7*	5+	0.33 ps *+22−10*	Jπ: J=5 from σ(E)(576)/σ(E)(158).
829.60 *5*	4+	>0.76 ps	
970.20 *9*	2+	0.076 ps *+21−14*	
1009.12 *7*	5+	0.44 ps *+25−12*	
1114.51 *6*	3+	0.24 ps *+4−2*	Jπ: J=0,1,3 from σ(E), γ(θ) rules out J=0, 1114γ to 4+ g.s. rules out J=1.
1450.61 *11*	0+	>0.4 ps	Anti-analog state of 0+ g.s. in ^{56}Fe (1974Fi09).
1720.09 *10*	(1+)[c]	0.34 ps *+35−12*	
1930.40 *19*			
2060.05 *17*			
2224.55 *17*			
2289.9 *3*	(7+)[c]		T=1
2304.9 *3*			
2357.4 *3*			
2469.2 *4*			
2609.6 *7*			
2635.52 *23*			
2647.3 *7*			
2665.2 *7*			
2730.3 *5*	(1+)[c]		
3510[@]	0+[a]		IAS of 0+ g.s. in ^{56}Fe (1983Or02).
3590[@]	0+[a]		IAS of 0+ g.s. in ^{56}Fe (1983Or02).
≈4440[b]	2+[c]		IAS of 2+ 847 in ^{56}Fe (1981Or04).

[†] For states connected by γ, E(level) are from Eγ and scheme by using least-squares fits; except as noted.
[‡] From DSA (1974Ba61).
[#] From 1973Sa11 based on γ(θ) and summary of transition strengths extracted from $T_{1/2}$ and Iγ, except as noted.
[@] From 1983Or02.
[&] From Adopted Levels.
[a] From 1983Or02 based on σ(E(n),θ) and DWBA calculation.
[b] From 1981Or04.
[c] From 1981Or04 based on σ(E(n),θ) and CCBA calculation.

^{56}Fe(p,n), (p,nγ) 1983Or02,1981Or04,1974Ba61 (continued)

$\gamma(^{56}Co)$

Unplaced γ's are from 1973Sa11 based on $\gamma\gamma$-coincidence.

E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	Mult. &	δ a	Comments
158.40‡ *10*	100	158.40	3^+	0.0	4^+	M1+E2	+0.023 *17*	α(K)exp=0.0120 *8* (1967Me18)
179.50‡ *11*	5.3@ *6*	1009.12	5^+	829.60	4^+			
253.05‡ *11*	1.5@ *2*	829.60	4^+	576.51	5^+			
269.44‡ *10*	36.5 *23*	1720.09	(1^+)	1450.61	0^+	M1		B(M1)(W.u.)=1.2 *+5−12*
284.86‡ *10*	11.0 *10*	1114.51	3^+	829.60	4^+	M1+E2	−0.05 *3*	B(M1)(W.u.)=0.4356 *13*; B(E2)(W.u.)=3.E+1 *+4−3*
x424.7 *2*								
432.5‡ *2*	6.3@ *8*	1009.12	5^+	576.51	5^+			
480.37‡ *8*	100@	1450.61	0^+	970.20	2^+	E2		B(E2)(W.u.)<4.3×10^3
576.47‡ *8*	100	576.51	5^+	0.0	4^+	M1+E2	−0.055 *15*	B(M1)(W.u.)=0.3473 *6*; B(E2)(W.u.)=6 *4*
671.18‡ *8*	73.6 *12*	829.60	4^+	158.40	3^+	M1+E2	−0.25 *3*	B(M1)(W.u.)<0.067; B(E2)(W.u.)<23
749.89‡ *8*	50.8 *26*	1720.09	(1^+)	970.20	2^+	M1+E2	+0.10 *15*	B(M1)(W.u.)=0.0773 *23*; B(E2)(W.u.)=3 *+9−3*
811.76‡ *8*	99.7@ *5*	970.20	2^+	158.40	3^+	M1+E2	−0.025 *15*	B(M1)(W.u.)=0.5397 *4*; B(E2)(W.u.)=1.0 *+13−10*
829.60‡ *8*	24.9 *13*	829.60	4^+	0.0	4^+	M1+E2	−0.43 *28*	B(M1)(W.u.)<0.013; B(E2)(W.u.)<12 δ: may be incorrect due to large background corrections.
945.5 *2*		2060.05		1114.51	3^+			
956.14‡ *8*	4.8 *3*	1114.51	3^+	158.40	3^+			
960.1 *2*		1930.40		970.20	2^+			
970.4‡ *2*	0.30@ *5*	970.20	2^+	0.0	4^+			
1009.14‡ *8*	88.4@ *88*	1009.12	5^+	0.0	4^+	M1+E2	−0.10 *5*	B(M1)(W.u.)=0.0426 *5*; B(E2)(W.u.)=0.8 *9*
x1046.6 *5*								
1090.1 *4*		2060.05		970.20	2^+			
1101.1 *5*		1930.40		829.60	4^+			
1110.0 *2*		2224.55		1114.51	3^+			
1114.47‡ *8*	84.2 *12*	1114.51	3^+	0.0	4^+	M1+E2	+0.085 *25*	B(M1)(W.u.)=0.05542 *24*; B(E2)(W.u.)=0.7 *4*
1184.9 *2*		2635.52		1450.61	0^+			
1254.4 *3*		2224.55		970.20	2^+			
1319.8 *3*		2289.9	(7^+)	970.20	2^+			
1334.7 *3*		2304.9		970.20	2^+			
1387.3 *3*		2357.4		970.20	2^+			
x1459.1 *6*								
1561.8‡ *2*	12.6 *12*	1720.09	(1^+)	158.40	3^+			
x1641.1 *7*								
1760.1 *5*		2730.3	(1^+)	970.20	2^+			
1772.1 *4*		1930.40		158.40	3^+			
x1782.4 *6*								
1892.7 *4*		2469.2		576.51	5^+			
1901.5 *4*		2060.05		158.40	3^+			
2066.1 *4*		2224.55		158.40	3^+			
2131.1 *5*		2289.9	(7^+)	158.40	3^+			
2146.4 *5*		2304.9		158.40	3^+			
2198.7 *5*		2357.4		158.40	3^+			
x2313.3 *9*								
2451.1 *7*		2609.6		158.40	3^+			

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^{56}Fe(p,n), (p,nγ) 1983Or02,1981Or04,1974Ba61 (continued)

$\gamma(^{56}Co)$ (continued)

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π
2488.8 *7*	2647.3		158.40	3^+
2506.7 *7*	2665.2		158.40	3^+

† From 1973Sa11, except as noted.
‡ From 1974Ba61.
# % photon branching from each level; values from weighted average of 1973Sa11 and 1974Ba61, except as noted.
@ From 1974Ba61.
& From $\gamma(\theta)$ with adopted J^π values of known levels. Values from 1974Ba61 and 1973Sa11.
a From $\gamma(\theta)$ (1973Sa11).
x γ ray not placed in level scheme.

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Level Scheme

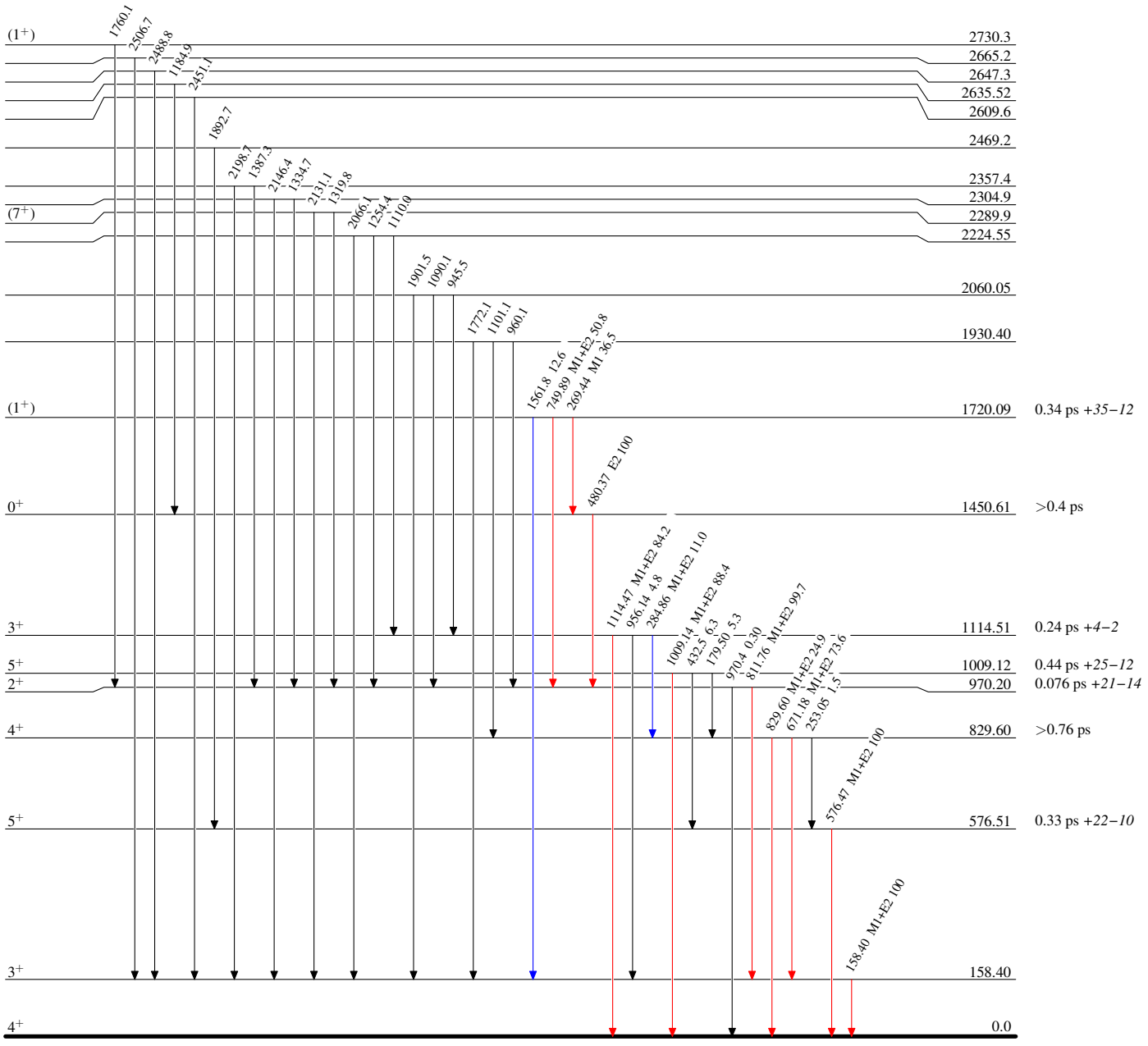
Intensities: Type not specified

Legend

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

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

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



$^{56}_{27}Co_{29}$