Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 128, 185 (2015)	10-Jul-2015

$Q(\beta^-)=-14340$ *SY*; S(n)=16201 *11*; S(p)=7378 *7*; $Q(\alpha)=-7936$ *10* 2012Wa38
$\Delta Q(\beta^-)$: syst=200.

^{52}Fe Levels

Ispin and analog state assignments taken from ^{54}Fe(p,t) and ^{50}Cr(^{3}He,n). Analogs identified in both reactions are given.

Cross Reference (XREF) Flags

A	^{53}Co p decay (247 ms)	E	^{54}Fe(p,t)	I	^{9}Be(^{55}Ni,Xγ)
B	^{50}Cr(^{3}He,n)	F	^{52}Co ε decay	J	Coulomb excitation
C	^{50}Cr(^{3}He,nγ)	G	^{53}Ni εp decay		
D	^{50}Cr(α,2nγ)	H	^{28}Si(^{28}Si,2p2nγ)		

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
0.0[&]	0^+	8.275 h *8*	ABCDEF HIJ	$\%\varepsilon+\%\beta^+=100$ $T_{1/2}$: from 1974Ro18. Others: 8.23 h *4* (1967Pa22). $T_{1/2}$: stripped atom $T_{1/2}$($^{52}Fe^{26+}$)=12.5 h *+15−12* (1995Ir01).
849.45[&] *10*	2^+	7.8 ps *10*	ABCDEFGHIJ	B(E2)↑=0.082 *10* (2004Yu07) XREF: B(840). $T_{1/2}$: from B(E2) (Coulomb excitation). Other: >0.7 ps DSAM ^{50}Cr(^{3}He,nγ). J^{π}: from L(3HE,N)=L(P,T)=2.
2384.55[&] *17*	4^+	0.22 ps *5*	BCDEF H	XREF: B(2360). $T_{1/2}$: other: 0.28 ps *+14−21* DSAM ^{50}Cr(^{3}He,nγ). J^{π}: from L(3HE,N)=L(P,T)=4.
2758.8 *7*	2^+	0.14 ps *+9−5*	BC E	XREF: B(2750)E(2762). J^{π}: L(^{3}He,n)=2. $T_{1/2}$: From DSAM in ^{50}Cr(^{3}He,nγ).
3585.0[a] *3*	4^+	0.28[@] ps *+21−7*	BC E H	XREF: B(3590)E(3583). J^{π}: from L(3HE,N)=L(P,T)=4.
4145.6 *20*	0^+		BC E	XREF: B(4160)E(4142). J^{π}: from L(3HE,N)=L(P,T)=0.
4325.5[&] *3*	6^+	0.17 ps *5*	C EF H	J^{π}: from E2 γ from 8^+ and 1941 γ to 4^+.
4396.3 *3*	3^-		C E H	XREF: E(4400). J^{π}: from E2 γ from 5^- and 3546G to 2^+.
4456 *8*	2^+		B E	XREF: B(4430). J^{π}: from L(3HE,N)=L(P,T)=2.
4850.6 *11*	$(5^-,6^+)$	0.5[@] ps *+23−2*	C E	XREF: E(4869). J^{π}: from L(P,T)=(5,6).
4872.2[a] *3*	6^+	0.21 ps *8*	H	J^{π}: from E2 γ to 4^+.
4896 *15*			E	
5136.9 *4*	5^-		e H	XREF: e(5134). J^{π}: from L(P,T)=5.
5139.6 *13*	5^-		C e	XREF: e(5134). J^{π}: from L(P,T)=5.
5328 *8*	4^+		E	J^{π}: From L(P,T)=4.
5363 *5*	0^+		B E	XREF: B(5360). J^{π}: From L(3HE,N)=L(P,T)=0.

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Adopted Levels, Gammas (continued)

^{52}Fe Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
5439 *15*			E	
5483 *20*	4^+		E	
5529 *20*	4^+		E	
5563 *8*	(3^-)		E	
5654.5 *4*	6^+		EF	T=1 IAS (^{52}Mn g.s.).
5718 *8*	0^+		b E	XREF: b(5760). J^{π}: L(^{3}He,n)=0.
5792 *10*			b E	XREF: b(5760).
5829 *5*	2^+		B E	XREF: B(5820). J^{π}: from L(3HE,N)=L(P,T)=2.
5965 *15*	4^+		E	
6034 *5*	2^+		b E	T=1 XREF: b(6070). IAS (^{52}Mn 378 keV)? see ^{54}Fe(p,t).
6044 *5*	2^+		b E	T=1 XREF: b(6070). IAS (^{52}Mn 378 keV)? see ^{54}Fe(p,t).
6174 *15*	(6^+)		E	
6231 *15*			E	
6360.7[&] *4*	8^+	0.15 ps *5*	H	$T_{1/2}$: 1998Ur05 determined the lifetime of this level from the best fit of the experimental spectrum with that obtained after summing the calculated line shape of the 2035 γ-ray and the experimental line shape of the 2045 contaminant line from ^{49}Cr. J^{π}: from E2 γ to 6^+.
6416 *5*	4^+		E	T=1 IAS (^{52}Mn 732 keV)? see ^{54}Fe(p,t).
6454 *15*			E	
6483 *5*	2^+		E	
6493.1[a] *4*	8^+	0.18 ps *4*	H	J^{π}: from E2 γ to 6^+.
6531 *10*	3^-		B E	XREF: B(6520). J^{π}: L(^{3}He,n)=3.
6564 *8*			E	
6634 *10*	(0^+)		E	
6714 *8*	2^+		B E	XREF: B(6700). J^{π}: L(^{3}He,n)=2.
6744 *15*			E	
6772 *8*	(2^+)		E	
6882 *5*	1^-		E	
6927 *15*	0^+		E	
6958.0 *4*	12^+	45.9 s *6*	H	$\%\varepsilon+\%\beta^+$=100; %IT=0.021 *5* (2005Da20) E(level): from 2005Ga20; others: 6957.3 keV *5* (2003Ax01,2004Ur02) and 6820 keV *130* (1998Ur05). $T_{1/2}$: from 1979Ge02. Additional information 1. J^{π}: from E4 γ to 8^+.
7013 *5*	3^-		E	
7124 *10*	(4^+)		B E	XREF: B(7120).
7261 *15*	(6^+)		b E	XREF: b(7280).
7289 *8*			b E	XREF: b(7280).
7338 *10*			b E	XREF: b(7280).
7381.9[&] *4*	(10^+)		H	J^{π}: from (E2) γ to 8^+.
7463 *8*	2^+		B E	XREF: B(7470). J^{π}: from L(3HE,N)=L(P,T)=2.
7510 *15*			E	

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Adopted Levels, Gammas (continued)

^{52}Fe Levels (continued)

E(level)†	Jπ‡	XREF	Comments
7611 *10*	6^+	b E	T=1 XREF: b(7640).
7636 *15*	4^+	b E	T=1 XREF: b(7640).
7787 *10*		b E	XREF: b(7820).
7817 *15*		b E	XREF: b(7820).
7935 *10*	2^+	E	
8037 *12*	0^+	B E	T=1 XREF: B(8050). J^π: from L(3HE,N)=L(P,T)=0. IAS (^{52}Mn 2474 keV) in ^{50}Cr(^{3}He,n).
8067 *8*		E	
8097 *10*		E	
8122 *15*		E	
8146 *10*	3^-	E	
8184 *10*		E	
8207 *8*	(3^-)	E	
8240 *10*		E	
8327 *10*	(3^-)	E	
8354 *5*	2^+	B E	XREF: B(8360). IAS (^{52}Mn 2796 keV) in ^{50}Cr(^{3}He,n) and ^{54}Fe(p,t). J^π: from L(3HE,N)=L(P,T)=2. T=(1).
8401 *8*	2^+	E	
8425 *15*		E	
8461 *10*		E	
8511 *8*	4^+	E	
8535 *5*	4^+	E	
8561 *5*	0^+	B E	T= 2 XREF: B(8570). A doublet with energy splitting of 4 keV in (p,t). IAS (^{52}Cr g.s., ^{52}Mn 2926 keV) in ^{54}Fe(p,t) and ^{50}Cr(^{3}He,n). J^π: from L(3HE,N)=L(P,T)=0.
8618 *8*		E	
8661 *15*	(4^+)	E	
8677 *10*		E	
8727 *15*		E	
8748 *10*	4^+	E	T=(1).
8770 *10*	(3^-)	E	
8832 *10*		E	
8872 *10*		E	
8900 *8*	(2^+)	E	
8936 *10*		E	
8962 *10*	(6^+)	E	
8985 *10*		b E	XREF: b(9010).
9044 *15*		b E	XREF: b(9010).
9059 *15*		E	
9130 *50*		B	
9213 *8*		b E	XREF: b(9250).
9279 *8*	4^+	b E	XREF: b(9250).
9311 *8*		E	
9338 *10*		E	
9357 *15*		E	
9458 *10*		b E	XREF: b(9470).
9497 *8*		b E	XREF: b(9470).
9770 *50*		B	

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Adopted Levels, Gammas (continued)

^{52}Fe Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
10006 *5*	(2+)	B E	XREF: B(10060). IAS (^{52}Mn 4390 keV) in ^{54}Fe(p,t) and ^{50}Cr(^{3}He,n). T=(2).
10049 *10*		E	
10332 *5*	0+	B E	XREF: B(10310). Jπ: from L(3HE,N)=L(P,T)=0.
10810 *50*		B	
10990 *20*	0+	B	T=2 Jπ: L(^{3}He,n)=0. IAS (^{52}Cr 2647 keV, ^{52}Mn 5491 keV) in ^{50}Cr(^{3}He,n).
11440 *50*		B	
11640 *50*		B	
11780 *30*	2+	B	T=2 Jπ: L(^{3}He,n)=2. IAS (^{52}Cr 3162 keV) in ^{50}Cr(^{3}He,n).

[†] Levels connected by gammas are from least squares fit, others from ^{54}Fe(p,t), except where seen only in (^{3}He,n).
[‡] From L value in ^{54}Fe(p,t), with S=0 neutron pair transfer assumed, except as noted.
[#] DSAM, from ^{28}Si(^{28}Si,2p2nγ), except as noted.
[@] DSAM, from ^{50}Cr(^{3}He,nγ).
[&] Band(A): g.s. band.
[a] Band(B): 4+ band (2004Ur02).

γ(^{52}Fe)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[@]	α[a]	Comments
849.45	2+	849.43[#] *10*	100	0.0	0+	[E2]		B(E2)(W.u.)=14.2 *19*
2384.55	4+	1535.27[#] *15*	100	849.45	2+	E2		B(E2)(W.u.)=26 *6*
2758.8	2+	1910 *2*	32 *11*	849.45	2+	[E2]		B(E2)(W.u.)=3.3 *+17−25*
		2760 *1*	100 *11*	0.0	0+	[E2]		B(E2)(W.u.)=1.7 *+7−11*
3585.0	4+	2735.0[‡] *3*	100[‡] *11*	849.45	2+	[E2]		B(E2)(W.u.)=1.1 *+3−9*
4145.6	0+	3296 *2*	100	849.45	2+			
4325.5	6+	1941.0[‡] *3*	100[‡]	2384.55	4+	(E2)[&]		B(E2)(W.u.)=10 *3*
4396.3	3−	3546.3[‡] *3*	100[‡]	849.45	2+	(E1)[&]		
4850.6	(5−,6+)	2466 *1*	100	2384.55	4+			
4872.2	6+	1286.7[‡] *3*	23[‡] *5*	3585.0	4+	[E2]		B(E2)(W.u.)=12 *6*
		2488.0[‡] *3*	100[‡] *7*	2384.55	4+	E2		B(E2)(W.u.)=2.0 *8*
5136.9	5−	740.6[‡] *3*	55[‡] *6*	4396.3	3−	(E2)[&]	0.00043	α=0.00043; α(K)=0.00038 *1*
		1553[‡] *1*	10[‡] *5*	3585.0	4+	[E1]		E_γ: Uncertainty assigned to transition by evaluators.
		2753.0[‡] *3*	100[‡] *20*	2384.55	4+	[E1]		I_γ: Intensity of transition has been corrected for the angular distribution by 1998Ur05, as specified in literature.
5139.6	5−	2380 *1*	40 *20*	2758.8	2+	[E3]		
		4286 *4*	10×10^{1} *4*	849.45	2+	[E3]		
5654.5	6+	1328.95[#] *25*	100	4325.5	6+			
6360.7	8+	2035.3[‡] *3*	100[‡]	4325.5	6+	E2		B(E2)(W.u.)=9 *4*
6493.1	8+	1620.8[‡] *3*	68[‡] *14*	4872.2	6+	[E2]		B(E2)(W.u.)=10 *4*

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Adopted Levels, Gammas (continued)

$\gamma(^{52}Fe)$ (continued)

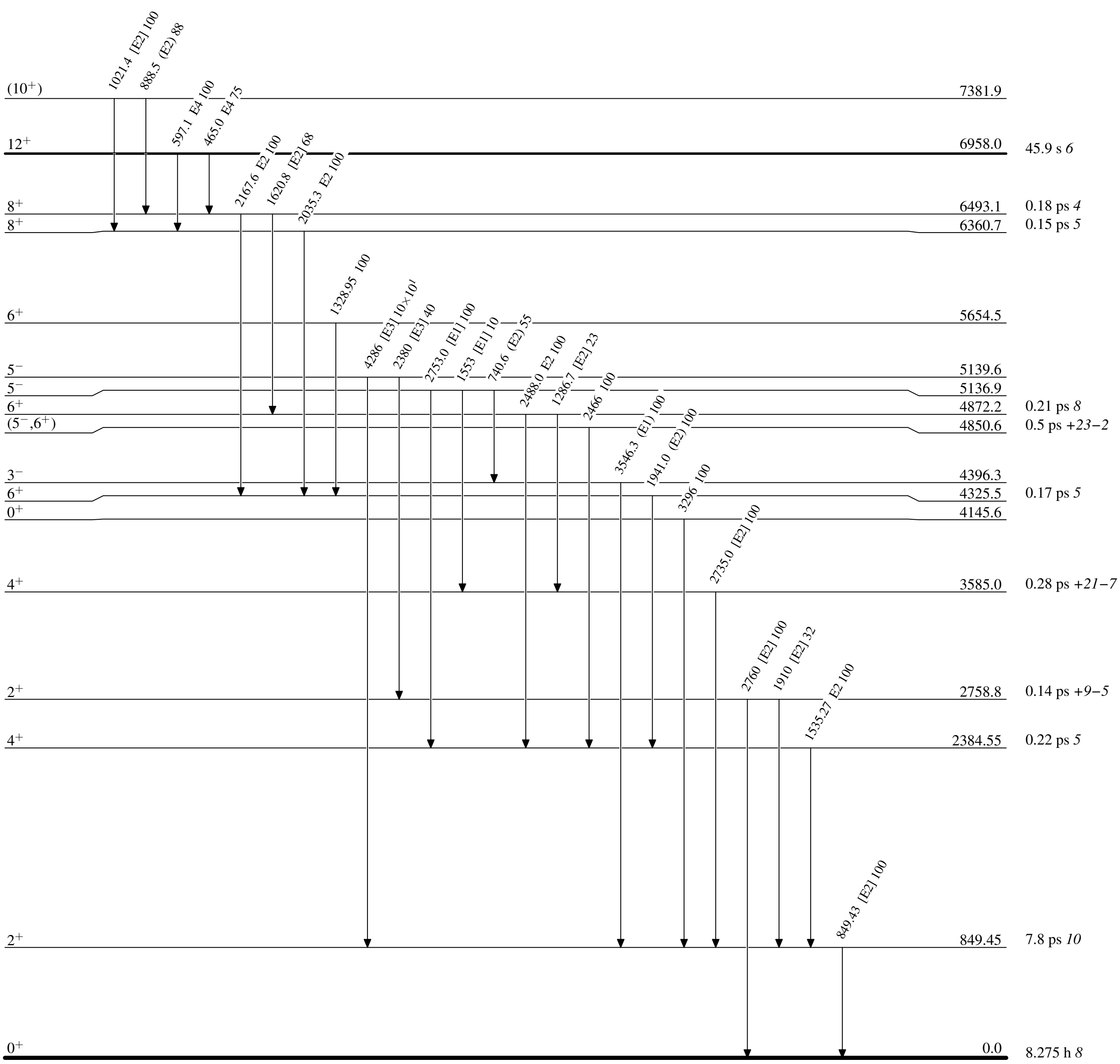
E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. @	α a	Comments
6493.1	8^+	2167.6‡ *3*	100‡ *10*	4325.5	6^+	E2		B(E2)(W.u.)=3.4 *9*
6958.0	12^+	465.0‡ *3*	75‡ *25*	6493.1	8^+	E4	0.0167	α(K)=0.0146 *5*; α(L)=0.00157 *5* B(E4)(W.u.)=0.0033 *16* Additional information 2. Mult.: From experimental E4 systematics for f7/2-shell nuclei see $^{28}Si(^{28}Si,2p2n\gamma)$ (2005Ga20).
		597.1‡ *3*	100‡ *33*	6360.7	8^+	E4	0.00566	α=0.00566; α(K)=0.00497 *15*; α(L)=0.00052 *2* B(E4)(W.u.)=0.00046 *22* Additional information 3. Mult.: From experimental E4 systematics for f7/2-shell nuclei see $^{28}Si(^{28}Si,2p2n\gamma)$ (2005Ga20).
7381.9	(10^+)	888.5‡ *3*	88‡ *6*	6493.1	8^+	(E2)		
		1021.4‡ *3*	100‡ *19*	6360.7	8^+	[E2]		

† From $^{50}Cr(^3He,n\gamma)$, except as noted.
‡ From $^{28}Si(^{28}Si,2p2n\gamma)$.
# From ^{52}Co ε decay.
@ From values of R(ado) in $^{28}Si(^{28}Si,2p2n\gamma)$ and using RULER to rule out mults, except as noted.
& From values of R(ado) in $^{28}Si(^{28}Si,2p2n\gamma)$ and D~π from Adopted Levels.
a 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.

Adopted Levels, Gammas

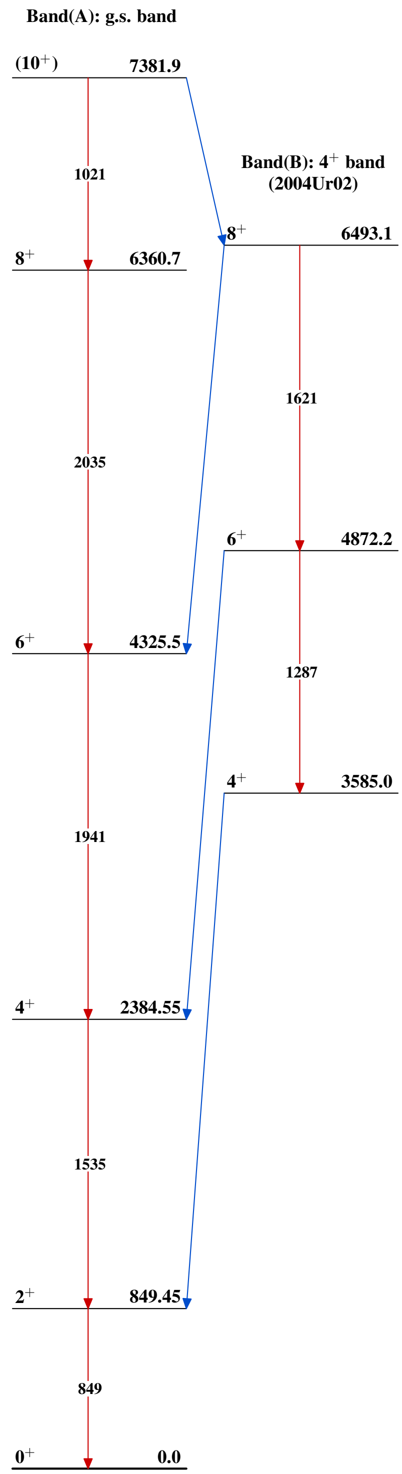
Level Scheme

Intensities: Relative photon branching from each level



$^{52}_{26}Fe_{26}$

Adopted Levels, Gammas



$^{52}_{26}Fe_{26}$