Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh	NDS 111,897 (2010)	12-Jan-2010

Q(β^-)=−2307.9 *12*; S(n)=10044.60 *18*; S(p)=11957.3 *16*; Q(α)=−7645.7 *5* 2012Wa38
Note: Current evaluation has used the following Q record −2307.6 1210044.601811955.5 *19*−7645.8 *4* 2009AuZZ,2003Au03.
S(2n)=17690.69 *19*, S(2p)=21450.1 *21* (2009AuZZ).
Structure calculations (levels, transition probabilities, etc.): 2009Su20, 2004Ho08, 2002Ca48, 1997Na04, 1990Ha16, 1979Mc03, 1978Jo01, 1976La06, 1974Pa13, 1973Ba12.
Additional information 1.

^{58}Fe Levels

Cross Reference (XREF) Flags

A	^{58}Mn β^- decay (3.0 s)	J	^{57}Fe(n,γ),(n,n):resonances	S	^{59}Co(γ,p)
B	^{58}Mn β^- decay (65.4 s)	K	^{57}Fe(d,p),(pol d,p)	T	^{59}Co(μ^-,nγ)
C	^{58}Co ε decay (70.86 d)	L	^{58}Fe(e,e′)	U	^{59}Co(n,d)
D	^{48}Ca(^{13}C,3nγ)	M	^{58}Fe(n,n′γ)	V	^{59}Co(p,2p)
E	^{54}Cr(^{6}Li,d)	N	^{58}Fe(p,p′)	W	^{59}Co(d,^{3}He)
F	^{55}Mn(α,pγ)	O	^{58}Fe(d,d′),(pol d,d′)	X	^{62}Ni(^{3}He,^{7}Be)
G	^{56}Fe(t,p),(pol t,p)	P	^{58}Fe(^{3}He,^{3}He′)	Y	^{60}Ni(μ^-,νpnγ)
H	^{56}Fe(α,^{2}He)	Q	^{58}Fe(α,α′)	Z	Cu(K$^-$,γ)
I	^{57}Fe(n,γ) E=th	R	Coulomb excitation		

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	XREF	Comments
0.0[a]	0$^+$	stable	ABCDEFGHI KLMNOPQRSTUVWXYZ	<r^2>$^{1/2}$=3.7748 fm *14* (2004An14,evaluation).
810.7662[a] *20*	2$^+$	6.54 ps *19*	ABCDEFG I KLMNOPQR TUVWXYZ	μ=+0.95 *11* (2009Ea02) Q=−0.27 *5* (1981Le02,1989Ra17) μ: g factor=+0.468 *56* from measured g(811,2$^+$,^{58}Ni)/g(847,2$^+$,^{56}Fe)= 0.920 *55* (2009Ea02) and measured g factor=+0.509 *53* (2009Ea01) for the 847, 2$^+$ state in ^{56}Fe. Using earlier measured ratio of 0.75 *24* (1977Br23), 2009Ea02 recommend averaged ratio of 0.912 *54* and g factor of +0.464 *56*. Further, 2009Ea02 recommend averaged g factor=+0.473 *51* by considering earlier measured (1969Si13, IPAC method) g factor=+0.514 *118*. 1989Ra17 give +0.92 *26* from 1977Br23 (transient- field integral PAC). See also 2005St24 compilation with quoted values from 1977Br23 and 1969Si13. Q: reorientation in Coulomb excitation (1981Le02). See also 2005St24 compilation. J$^\pi$: E2 γ to 0$^+$. $T_{1/2}$: from B(E2)=0.1234 *36* (1981Le02, Coul. ex.). 2001Ra27 evaluation gives 6.73 ps 22 based on adopted B(E2)=0.120 *4* from Coulomb excitation and DSA methods. Values of 2.4 ps *7* from DSAM in (α,pγ) and 8.6 ps *7* from B(E2) in (e,e′) are discrepant.
1674.731[b] *6*	2$^+$	1.6 ps *4*	BCDEFG I K MNO Q TUVWX	J$^\pi$: L(t,p)=2. Also M1+E2 γ to 2$^+$. $T_{1/2}$: from (α,pγ).
2076.52[a] *3*	4$^+$	0.28 ps *4*	B D F MN Q T WX	J$^\pi$: ΔJ=2, E2 γ to 2$^+$. $T_{1/2}$: weighted average of 0.24 ps 4 in (n,n′γ), 0.24 ps 7 and 0.37 ps +6−5 in (α,pγ).

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
2133.895[b] *21*	3^+	2.2 ps *7*	B DEFG I K MN T	XREF: N(2123). $T_{1/2}$: from (α,pγ). J^{π}: ΔJ=1, M1+E2 γ to 2^+, ΔJ=1, dipole γ from 4^+. Significant excitation in (p,p′), (^{6}Li,d), and (t,p) suggests important role of indirect two-step processes, L=4 in (^{6}Li,d) from 1977Fu03 contradicts J=3^+.
2257.95 *21*	0^+[@]	>2.5 ps	EFG I K MN U	$T_{1/2}$: DSAM in (α,pγ).
2600.397[b] *25*	4^+	0.55 ps *18*	B DEFG K MNO Q WX	XREF: X(2573). J^{π}: ΔJ=2, E2 γ to 2^+; M1+E2 γ to 4^+. $T_{1/2}$: unweighted average of 0.37 ps +12−7 and 0.73 ps 14 in (α,pγ) Other: >0.28 ps in (n,n′γ).
2782.14 *19*	1^+	0.18 ps *3*	DEFG I K MN	XREF: D(?). E(level): population in (^{6}Li,d) is questionable. $T_{1/2}$: weighted average of 0.18 ps +3−2 in (α,pγ) and 0.20 ps +9−5 in (n,n′γ). Other: 0.062 ps 17 in (n,γ) is in disagreement. J^{π}: 1^+,2^+ from M1+E2 to 2^+ and primary γ D from 0^-,1^- neutron resonance; $\gamma(\theta)$ in neutron capture excludes J=2.
2864.72 *12*	(5)	3.1 ps *14*	De n	J^{π}: ΔJ=1, dipole γ to 4^+; γ from (7). $T_{1/2}$: from (^{13}C,3nγ).
2876.34 *13*	2^+[@]	0.095 ps *14*	AB DeFG I K Mn T	XREF: D(?). $T_{1/2}$: weighted average of 0.094 ps 14 in (α,pγ) and 0.097 ps +21−14 in (n,n′γ). Other: 0.030 ps +17−8 in (n,γ) is in disagreement.
2970 *30*	(5^-)		N	J^{π}: L=(5) in (p,p′).
3083.69 *19*	2^+[@]	0.031 ps *6*	AB FG I K MN WX	XREF: N(3072)X(3030). $T_{1/2}$: weighted average of 0.025 ps +6−4 in (α,pγ), 0.033 ps +12−8 in (n,n′γ) and 0.047 ps 9 in (n,γ).
3134 *5*	4^+		G N	E(level): from (p,p′) with 11 keV correction added. J^{π}: L(p,p′)=4.
3233.26 *6*	2^+	0.22 ps *5*	B F K MN	XREF: N(3222). J^{π}: L=1+3 in (d,p). $T_{1/2}$: from (α,pγ).
3243.97 *23*	0^+[@]	31 fs *+67−14*	AB FG I M	$T_{1/2}$: from (n,γ).
3389 *30*	2^+		N U	J^{π}: L(p,p′)=2.
3449.7 *3*	(4^+)	0.36 ps *+13−8*	D F K MN	$T_{1/2}$: from (α,pγ). J^{π}: from σ analysis of (n,n′γ); ΔJ=1 γ to 3^+.
3537.97 *15*	1^+	8 fs *3*	FG I K M	$T_{1/2}$: weighted average of 6 fs 3 in (α,pγ) and 10 fs 3 in (n,n′γ). J^{π}: L=1, L+1/2 in (pol d,p), $\gamma\gamma(\theta)$ in (n,γ); γ(circ pol) in (n,γ).
3543 *5*	2^+		N	E(level): from (p,p′) with 11 keV correction added. J^{π}: L(p,p′)=2.
3596.90[a] *14*	6^+	0.20 ps *7*	D F M WX	J^{π}: ΔJ=2, E2 γ to 4^+; band assignment. $T_{1/2}$: unweighted average of 0.34 ps 4 and 0.15 ps +3−2 in (α,pγ); 0.11 ps +8−4 in (n,n′γ). Other: <3 ps in (^{13}C,3nγ).
3629.60 *23*	2^+[@]	8 fs *4*	B FG I K MNO	J^{π}: $\sigma(\theta)$ in (p,p′) inconsistent with L=2 which may imply a separate level near this energy. $T_{1/2}$: unweighted average of 6 fs 2 in (α,pγ), 15 fs 3 in (n,n′γ) and 2.6 fs +29−11 in (n,γ).

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
3754.2 *4*	(4)$^+$	<0.013 ps	FG K W	Jπ: L=(4) in (t,p), L=1+3 in (d,^{3}He). $T_{1/2}$: from (α,pγ).
3789.49 *18*	(5$^-$)[@]	0.026 ps *+6−4*	FG K M	$T_{1/2}$: from (α,pγ).
3854 *10*	2$^+$		K	Jπ: L=1+3 in (d,p).
3860.9 *7*	3$^-$	0.090 ps *+35−21*	G LMNOPQ X	B(E3)↑=0.0139 *13* XREF: N(3845)P(3800). Jπ: L(p,p′)=L(^{3}He,^{3}He′)=3. $T_{1/2}$: from (n,n′γ). B(E3) from (e,e′). See also 2002Ki06 evaluation.
3880.1 *3*	1$^+$	<4 fs	F I K M	$T_{1/2}$: from (α,pγ); other: 0.7 fs *7* (n,γ). Jπ: 0$^+$,1$^+$ from CP of γ′s in polarized thermal (n,γ) and L(d,p)=1; γ to 0$^+$ excludes 0$^+$.
3886.40[e] *15*	6$^+$	0.48 ps *10*	D F M W	Jπ: ΔJ=2, E2 γ to 4$^+$; ΔJ=0 γ to 6$^+$; L=3 in (d,^{3}He). $T_{1/2}$: weighted average of 0.49 ps *+15−7* (1977Ca28) and 0.47 ps +17−11 (1978Bo35) from (α,pγ). Other: 11.8 ps *14* in (^{13}C,3nγ) is in severe disagreement.
3901.62 *7*	(3)$^+$	0.031 ps *7*	B K M	$T_{1/2}$: from (n,n′γ). Jπ: L=3 in (d,p), analysis of σ in (n,n′γ).
4010.8	2+[@]		G K M	
4015.01 *24*	1$^+$	0.008 ps *+4−3*	F I	$T_{1/2}$: from (α,pγ). Jπ: from circular polarization of γ′s in polarized thermal (n,γ).
4088.49 *17*	4+[@]	0.06 ps *+8−3*	B G MN W	E(level),Jπ: possibly a doublet in (p,p′) with L=3,4. $T_{1/2}$: DSAM in (n,n′γ).
4139.24 *25*	1$^+$	2.8 fs *21*	F I K	$T_{1/2}$: from (n,γ); other: <0.7 fs in (α,pγ). Jπ: 0$^+$,1$^+$ from CP of polarized thermal (n,γ) and L(d,p)=1; γ to 0$^+$ excludes 0$^+$.
4158 *10*	0+[@]		G K	
4214.64[c] *15*	(5$^+$)	0.45 ps *+14−10*	D FG K M U	Jπ: ΔJ=1 γ to 4$^+$. Positive parity is tentatively proposed in (α,pγ) and (^{13}C,3nγ) and from shell-model predictions (1978Na06,2000ApZW). The 1997 evaluation (1997Bh02) assigned negative parity, primarily based on L(p,p′)=5+3 for a 4230 *30* group, but this L value gives Jπ=4$^-$ in contradiction to J=5 from angular distribution data in (α,pγ) and (^{13}C,3nγ) reactions. The L(t,p)=(6) and L(d,p)=(3) suggest positive parity but implied spins are in disagreement with 5$^+$. For (p,p′), a separate level is now proposed. $T_{1/2}$: from (α,pγ).
4230 *30*	4$^-$		N	Jπ: L(p,p′)=3+5.
4237 *10*	(2$^+$)		K	Jπ: L=(1+3) in (d,p).
4297.8 *5*	2$^+$	2.8 fs *21*	G I K n	$T_{1/2}$: from (n,γ). Jπ: L=2 in (p,p′).
4312.92 *9*	2$^+$	11 fs *7*	B K Mn W	$T_{1/2}$: from (n,γ). Jπ: L=1+3 in (d,p).
4322.5 *3*	1$^+$		I	Jπ: from CP of γ′s in polarized thermal (n,γ).
4340 *20*	(5$^-$,4$^+$)[@]		G	

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)†	J$^{\pi\ddagger}$	T$_{1/2}$$^{\#}$	XREF	Comments
4348 *10*	2^+		K	J$^\pi$: L=1+3 in (d,p).
4350 *20*	$(0^+)^@$		G	
4352.7 *7*	1^+		I	J=1 from CP of γ's in polarized thermal neutron capture.
4398 *10*			K	
4438 *10*	$2^-,3^-$		K n	J$^\pi$: L=2 and L+1/2 transfer in (pol d,p).
4440 *20*	$3^-,4^-$		G n W	J$^\pi$: L(d,^{3}He)=0. L(t,p)=(5,4) is inconsistent with J$^\pi$=$3^-,4^-$.
4444.3 *5*	1^+	6 fs *+28−6*	I M	T$_{1/2}$: from (n,γ). J$^\pi$: from CP of γ's in (n,γ).
4450 *20*	$(0^+)^@$		G	
4468 *10*	3^-		G K n Q	J$^\pi$: L=3 in (α,α'); L(p,p')=3 for a 4441 *30* group.
4493.1 *3*			B K	
4514 *10*	$(3^+,2^+)$		K	J$^\pi$: L=(3) in (d,p), shell model.
4530.15 *23*	1,2		AB	J$^\pi$: γ to 0^+.
4550.37 *24*	1^+	21 fs *7*	I K T	T$_{1/2}$: from (n,γ). J$^\pi$: $0^+,1^+$ from CP of γ's in polarized thermal neutron capture; L=1, L-1/2 in (pol d,p); γ to 0^+ excludes 0^+.
4590.0 *4*	$(2^+,3,4^+)$		B K	J$^\pi$: γ's to 2^+ and 4^+.
4610 *20*	$3^-,4^-$		VW	XREF: V(4700). J$^\pi$: L=0 in (d,^{3}He) and (p,2p).
4620 *10*	$2^{+@}$		G K	
4661 *10*			K	
4669.38^c *14*	(7^+)	0.38 ps *+12−6*	D FGH	E(level): unresolved doublet in (α,^{2}He) at 4650 *50* with (7^- and 5^-) from DWBA analysis. L(t,p)=2+8 for E=4670. J$^\pi$: ΔJ=2 γ, E2 γ to (5^+); ΔJ=1 γ to 6^+. T$_{1/2}$: from (α,pγ).
4711 *10*	$(2)^+$		K W	J$^\pi$: L=(1+3) in (d,p), L=1+3 in (d,^{3}He).
4720 *20*	$1^{-@}$		G	
4809 *10*	(5^-)		G K	J$^\pi$: L(t,p)=6,(5); L(d,p)=5 needed to give a J$^\pi$=6^+ is considered unlikely.
4833.89 *25*	$1^+,2^+$		B I K W	J$^\pi$: primary γ from $0^-,1^-$ neutron resonance. γ to 3^+. L(d,^{3}He)=3.
4890 *20*	$2^{+@}$		G	
4937 *10*	$2^{+@}$		G K W	J$^\pi$: L(t,p)=2 for E=4960 *20*.
4990	$(2^+,3^-)$		G	J$^\pi$: L(t,p)=2,(3).
5000.23 *18*	1^+	3.0 fs *10*	I K	XREF: K(4992). J$^\pi$: $0^+,1^+$ from CP of γ's in polarized thermal (n,γ); L=1, L-1/2 in (pol d,p); γ to 0^+ excludes 0^+. T$_{1/2}$: from (n,γ).
5020 *20*	$5^{-@}$		G	
5060 *20*	$2^{+@}$		G W	
5138 *10*	$0^{+@}$		G K	
5164 *10*			K w	
5213 *10*	$2^{+@}$		G K w	
5220.9 *5*	1,2	<0.38 ps	I M w	T$_{1/2}$: from (n,n'γ); other: <2.4 fs in (n,γ). J$^\pi$: dipole γ from $0^-,1^-$ (n,γ) resonance; γ to 0^+ excludes J=0.

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
5236 *10*			K W	
5254 *10*	3^-[@]		G K	
5294.8 *6*	$(1^+,2,3^+)$	3.5 fs *28*	G I K	$T_{1/2}$: from (n,γ). J^{π}: γ's to 1^+ and 3^+.
5315 *10*	$3^-,4^-$		K W	J^{π}: L=0+2 in (d,^{3}He).
5343.33[e] *22*	8^+	0.42 ps *+10−8*	D F	J^{π}: ΔJ=2 E2 γ to 6^+; band assignment. $T_{1/2}$: from (α,pγ).
5370 *10*	$(4^+,5^-)$[@]		G K x	
5400 *50*	$^-$		Wx	J^{π}: L=2 in (d,^{3}He), with $J^{\pi}=1^-$ to 6^-. This peak could include the 5370 *10* level if $J^{\pi}=5^-$, and/or the 5414 level if $J^{\pi}=2^-$.
5406 *10*	0^+[@]		G K	
5417.6 *6*	$(1^+,2,3^-)$	<0.7 fs	I	J^{π}: γ's to 2^+ and 3^+; primary γ from $0^-,1^-$. E(level): 5418.1 keV obtained from the 4626.5 *5* primary neutron capture γ ray populating this level is discrepant with the level energy from a least-squares fit.
5462 *10*	(2^+)[@]		G K	
5502.9[a] *10*	(8^+)	<0.14 ps	D F	J^{π}: γ to 6^+; band assignment. $T_{1/2}$: from (^{13}C,3nγ).
5506 *10*			K	
5523.0 *22*	0^+[@]		G I K	
5620 *10*	0^+[@]		G K	
5655 *10*	2^+[@]		G K W	J^{π}: L=1+3 in (d,^{3}He) for 5600 *50* level.
5716 *10*	$3^-,4^-$		K W	J^{π}: L=0+2 in (d,^{3}He).
5734 *10*	2^+[@]		G K	
5763 *10*			K	
5788 *10*	$(2^+,3^-)$[@]		G K	
5817 *10*	$(2^-,3^-)$		K	J^{π}: L=(2) in (d,p), shell model.
5830 *20*	0^+[@]		G	
5832.08[c] *23*	(9^+)	0.40 ps *+15−4*	D F	J^{π}: ΔJ=2, E2 γ to (7^+). $T_{1/2}$: from 1977Ca28 in (α,pγ). Other: 0.8 ps *3* from (^{13}C,3nγ).
5857 *10*	$(2^-,3^-)$		K	J^{π}: L=(2) in (d,p).
5880 *20*	$(2^+,3^-)$[@]		G	
5887 *10*	$(0^-,1^-)$		K	J^{π}: L=(0) in (d,p).
5914 *10*			K	
5952 *10*	(2^+)[@]		G K	
5989 *10*			K	
6030 *10*			K	
6032.9[d] *5*	(9^+)		D	J^{π}: ΔJ=2 γ to (7^+); band assignment.
6054 *10*			G K	E(level): possible doublet in (t,p), (pol t,p).
6100 *50*	$3^-,4^-$		W	J^{π}: L=0 in (d,^{3}He).
6146 *10*	2^+[@]		G K	
6168 *10*	(0^+)[@]		G K	
6202 *10*	$3^-,4^-$		K W	J^{π}: L=0 in (d,^{3}He).
6238 *10*	$(1^-,2^+)$[@]		G K	
6279 *10*	$(1^-,2^+)$[@]		G K	
6282.7[e] *5*	(9^+)	<0.14 ps	D	J^{π}: ΔJ=1 γ to 8^+; band assignment. $T_{1/2}$: from (^{13}C,3nγ).

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	XREF	Comments
6295 *10*	(5⁻)		H K	J^π: from DWBA analysis in (α,^{2}He).
6328 *10*			G K	E(level): possible doublet in (t,p), (pol t,p).
6348 *10*			K	
6370 *10*			K	
6400 *10*	(6⁺,7⁻)[@]		G K	
6436 *10*	1⁻[@]		G K	
6450 *10*	0⁺[@]		G K	
6476 *10*			K	
6532 *10*			K	
6558 *10*			K	
6580 *20*	(6⁺)[@]		G	
6593 *10*			K	
6615 *10*			K	
6636 *10*			K	
6650 *20*	0⁺[@]		G	
6679 *10*	(3⁻,2⁻)		K	J^π: L=(2) in (d,p), shell model.
6741 *10*			K	
6760 *20*	0⁺[@]		G	
6771 *10*			K	
6789 *10*			K	
6842 *10*			G K	
6870 *20*	(5⁻)[@]		G	
6909 *10*	1⁻[@]		G K	
6953 *10*	2⁺[@]		G K	
7023 *10*			K	
7028 *10*			K	
7048 *10*	(1⁻,2⁺)[@]		G K	
7060 *10*			K	
7094 *10*			K	
7124 *10*	0⁺[@]		G K	
7166 *10*	1⁻[@]		G K	
7199 *10*			K	
7230 *10*			K	
7242.6[e] *9*	(10⁺)	<0.14 ps	D	J^π: ΔJ=1 γ to (9⁺); band assignment. $T_{1/2}$: from (^{13}C,3nγ).
7272 *10*			K	
7289 *10*			K	
7351 *10*			K	
7380 *50*	(8⁺)		H	J^π: from analysis of σ in (α,^{2}He).
7429 *10*	(0⁻,1⁻)		K	J^π: L=(0) in (d,p).
7456.7[d] *5*	(10⁺)		D	J^π: ΔJ=1 γ to (9⁺); band assignment.
7457 *10*			K	
7473 *10*			K	
7492 *10*			K	
7507 *10*			K	
7534 *10*			K	
7567 *10*			K	
7578 *10*			K	
7585 *10*			K	
7605 *10*			K	
7628 *10*			K	
7653 *10*			K	

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
7680? *10*			K	
7690? *10*			K	
7731.3[c] *5*	(11$^+$)	<0.14 ps	D	J^{π}: ΔJ=2, (E2) γ to (9$^+$); band assignment. $T_{1/2}$: from (^{13}C,3nγ).
7734 *10*			K	
7775 *10*			K	
7797 *10*			K	
7824 *10*			K	
7846 *10*			K	
7883 *10*			K	
7901 *10*			K	
7918 *10*			K	
7946 *10*			K	
7974 *10*			K	
7997 *10*			K	
8018 *10*			K	
8045 *10*			K	
8065 *10*			K	
8084 *10*			K	
8100 *10*			K	
8121 *10*			K	
8137 *10*			K	
8157 *10*			K	
8182 *10*			K	
8310 *50*	(6$^+$)		H	J^{π}: from analysis of σ in (α,^{2}He).
9444.8[d] *6*	(12$^+$)		D	J^{π}: ΔJ=2 γ to (10$^+$); band assignment.
9939.1 *9*			D	J^{π}: γ to (11$^+$) suggests (11,12,13$^+$).
9984.5 *7*	(12)		D	J^{π}: ΔJ=1 γ to (11$^+$).
10041.05 *18*	1$^-$[&]		J	
(10044.31 *19*)	1$^-$		I	J^{π},E(level): for s-wave capture on ^{57}Fe(J^{π}=1/2$^-$). S(n)=10044.60 *18* (2009AuZZ).
10046.20 *18*	2$^+$[&]		J	
10048.48 *18*	0$^-$[&]		J	
10049.26 *18*	+[&]		J	
10050.71 *18*	1$^-$[&]		J	
10051.69 *18*	(+)[&]		J	
10052.40 *18*	(+)[&]		J	
10052.97 *18*	(+)[&]		J	
10053.64 *18*	(+)[&]		J	
10056.48 *18*	(+)[&]		J	
10057.17 *18*	(+)[&]		J	
10057.68 *18*	(+)[&]		J	
10058.30 *18*	1$^-$[&]		J	
10058.49 *18*			J	
10062.34 *18*	(+)[&]		J	
10062.52 *18*	(−)[&]		J	
10062.98 *18*	(+)[&]		J	
10065.28 *18*	(+)[&]		J	
10065.52 *18*	(−)[&]		J	
10065.6 *3*			J	

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Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
10069.94 *18*			J	
10071.33 *18*	(+)[&]		J	
10072.73 *18*	(−)[&]		J	
10073.14 *19*	1−[&]		J	
10075.4[c] *9*	(13+)	<0.14 ps	D	Jπ: ΔJ=2, (E2) γ to (11+); band assignment. $T_{1/2}$: from (^{13}C,3nγ).
10075.98 *18*	(+)[&]		J	
10079.18 *18*			J	
10081.07 *18*	(+)[&]		J	
10081.83 *18*	(+)[&]		J	
10083.30 *18*	(−)[&]		J	
10083.71 *19*	(+)[&]		J	
10085.28 *20*	1−[&]		J	
10085.8 *18*	(+)[&]		J	
10086.2 *18*			J	
10087.4 *19*			J	
10090.8 *18*	1−[&]		J	
10093.66 *19*	(+)[&]		J	
10094.64 *19*			J	
10096.39 *19*			J	
10096.56 *19*	(−)[&]		J	
10099.44 *19*	0−[&]		J	
10099.80 *19*	(+)[&]		J	
10102.40 *19*			J	
10102.51 *18*			J	
10104.59 *22*	1−[&]		J	
10105.53 *19*			J	
10105.77 *19*			J	
10106.49 *19*			J	
10107.44 *19*			J	
10107.71 *19*			J	
10110.19 *19*			J	
10111.48 *19*			J	
10114.80 *19*			J	
10116.03 *19*			J	
10117.60 *18*			J	
10120.16 *23*	1−[&]		J	
10123.50 *20*			J	
10126.30 *20*			J	
10127.60 *20*			J	
10130.32 *20*			J	
10131.34 *20*			J	
10133.01 *20*			J	
10134.35 *20*			J	
10136.36 *20*			J	
10136.67 *20*	1−[&]		J	
10136.93 *20*			J	
10137.65 *20*			J	
10139.22 *20*			J	
10140.99 *20*			J	
10141.73 *20*			J	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	Comments
10142.73 *20*		J	
10143.94 *20*		J	
10144.63 *20*	$(^{+})$[&]	J	
10146.76 *20*		J	
10147.98 *21*		J	
10148.63 *21*		J	
10149.57 *21*		J	
10150.33 *21*		J	
10150.82 *21*		J	
10152.1 *3*	1^{-}[&]	J	
10152.9 *3*	1^{-}[&]	J	
10153.76 *21*		J	
10155.43 *21*		J	
10156.20 *21*		J	
10157.10 *22*		J	
10161.72 *22*	$(^{+})$[&]	J	
10163.98 *22*		J	
10166.42 *22*		J	
10167.4 *3*	1^{-}[&]	J	
10168.4 *3*	0^{-}[&]	J	
10169.09 *22*		J	
10171.84 *22*	1^{-}[&]	J	
10172.53 *22*		J	
10174.10 *22*		J	
10176.36 *22*		J	
10176.8 *3*	0^{-}[&]	J	
10177.52 *22*		J	
10182.9 *3*	0^{-}[&]	J	
10190.81 *23*		J	
10192.23 *23*		J	
10192.68 *23*		J	
10196.87 *23*		J	
10200.15 *24*		J	
10201.72 *24*		J	
10206.53 *25*		J	
10208.23 *25*		J	
10208.7 *4*	1^{-}[&]	J	
10208.99 *25*		J	
10210.46 *25*		J	
10210.66 *25*	1^{-}[&]	J	
10210.97 *23*		J	
10217.83 *25*	0^{-}[&]	J	
10221.37 *25*		J	
10227.1 *4*	1^{-}[&]	J	
10228.15 *3*		J	
10230.8 *3*		J	
10234.9 *3*		J	
10238.4 *3*		J	
10240.0 *3*		J	
10241.2 *3*		J	
10353.8 *9*		D	J^{π}: γ to (11^{+}) suggests $(11,12,13^{+})$.
11857.0[d] *8*	(14^{+})	D	J^{π}: γ to (12^{+}); band assignment.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{58}Fe Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
11911.0 *9*		D	Jπ: γ to (12) suggests (12,13,14).
12813.3[c] *16*	(15⁺)	D	Jπ: γ to (13⁺); band assignment.

[†] From a least-squares fit to Eγ′s for levels populated in γ-ray studies. For levels populated in particle-transfer and/or inelastic scattering studies, the values are averaged over all available data. In addition poorly resolved groups are reported at 2.94, 3.24, 4.11, 4.75, 5.25, 5.68, 6.23 and 6.55 MeV with an uncertainty of 0.12 MeV in ^{59}Co(γ,p). These are not not included in cross reference (XREF) table.

[‡] In in-beam γ-ray studies: ^{55}Mn(α,pγ) and ^{48}Ca(^{13}C,3nγ), ascending order of spins are assumed as the excitation energy rises. When J^{π} is deduced from L-transfers in particle transfer reactions, the target J^{π}′s are as follows: $1/2^-$ for ^{57}Fe in (d,p) reaction; $7/2^-$ for ^{59}Co in (d,^{3}He); 0^+ in (^{6}Li,d), (t,p) and (^{3}He,^{7}Be) reactions. The abbreviation CP in (n,γ) indicates circular polarization measurement.

[#] For excited states, most values are from DSAM in the following reactions: ^{55}Mn(α,pγ); ^{57}Fe(n,γ) E=th and ^{58}Fe(n,n′γ). Selected values are also available from DSAM and recoil-distance method in ^{48}Ca(^{13}C,3nγ).

[@] From L(t,p).

[&] From L-value in neutron resonances. See ^{57}Fe(n,γ),(n,n):resonances.

[a] Band(A): yrast band.

[b] Band(B): Band based on 2^+.

[c] Band(C): band based on (5^+).

[d] Band(D): band based on $9^{(+)}$.

[e] Band(E): band based on (6^+).

$\gamma(^{58}Fe)$

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.†	δ	α@	Comments
810.7662	2^+	810.7593 *20*	100	0.0	0^+	E2		3.32×10^{-4}	B(E2)(W.u.)=18.5 *6* Mult.: from $\gamma\gamma(\theta)$, $\gamma(\theta)$, RUL and measured α(K)exp.
1674.731	2^+	863.951 *6*	100	810.7662	2^+	M1+E2	−0.69 *5*		B(M1)(W.u.)=0.0082 *21*; B(E2)(W.u.)=10 *3* Mult.,δ: D+Q from $\gamma\gamma(\theta)$, $\gamma(\theta)$, RUL. δ: from ^{58}Co ε decay. Others: −0.57 *6* (n,γ), −0.50 *5* (n,n′γ).
		1674.725 *10*	76.4 *15*	0.0	0^+	[E2]			B(E2)(W.u.)=0.87 *22*
2076.52	4^+	1265.74 *5*	100	810.7662	2^+	E2			B(E2)(W.u.)=47 *7* Mult.: from $\gamma(\theta)$ in (α,pγ) and (^{13}C,3nγ) and RUL.
2133.895	3^+	459.160 *25*	36 *1*	1674.731	2^+	(M1)			B(M1)(W.u.)=0.027 *9*
		1323.09 *5*	100 *3*	810.7662	2^+	M1+E2	−0.40 *5*		B(M1)(W.u.)=0.0027 *9*; B(E2)(W.u.)=0.48 *19* δ: from $\gamma(\theta)$ in (n,n′γ). Other: −0.48 +*12*−*10* (n,γ). Mult.: from $\gamma(\theta)$ and RUL.
2257.95	0^+	1447.31 *25*	100	810.7662	2^+	[E2]			B(E2)(W.u.)<2.7
2600.397	4^+	466.48 *3*	34.3 *12*	2133.895	3^+	(M1)			B(M1)(W.u.)=0.053 *18*
		523.86 *3*	100 *3*	2076.52	4^+	M1+E2	−0.15 *5*		B(M1)(W.u.)=0.11 *4*; B(E2)(W.u.)=17 *13* Mult.: from $\gamma(\theta)$ in (n,n′γ) and RUL. δ: from (n,n′γ). Other: +6.3 in (α,pγ); mult=Q in (^{13}C,3nγ).
		925.68 *5*	45.5 *17*	1674.731	2^+	E2			B(E2)(W.u.)=20 *7* Mult.: from $\gamma(\theta)$ in (α,pγ), (^{13}C,3nγ) and RUL.
		1789.59 *8*	77.4 *24*	810.7662	2^+	E2			B(E2)(W.u.)=1.3 *5* Mult.: from $\gamma(\theta)$ in (α,pγ), (^{13}C,3nγ) and RUL.
2782.14	1^+	524.4 *3*	16.4 *8*	2257.95	0^+				
		1106.7 *3*	47 *3*	1674.731	2^+	M1+E2	−0.18 *3*		B(M1)(W.u.)=0.020 *4*; B(E2)(W.u.)=1.0 *4* Mult.: from $\gamma(\theta)$ in (n,γ) and RUL. δ: from $\gamma(\theta)$ in (n,γ).
		1971.6 *5*	100 *8*	810.7662	2^+	M1+E2	−0.17 *4*		B(M1)(W.u.)=0.0074 *15*; B(E2)(W.u.)=0.11 *6* Mult.: from $\gamma(\theta)$ in (n,γ) and RUL. δ: from $\gamma(\theta)$ in (n,γ).
		2781.9 *9*	47 *5*	0.0	0^+	[M1]			B(M1)(W.u.)=0.0013 *3*
2864.72	(5)	264.36 *12*	100	2600.397	4^+	D			Mult.: from $\gamma(\theta)$ in (^{13}C,3nγ).
2876.34	2^+	2065.59 *14*	100 *8*	810.7662	2^+	M1+E2	−0.33 +*8*−*11*		B(M1)(W.u.)=0.022 *5*; B(E2)(W.u.)=1.1 *6* δ: from (n,γ); −0.13 *3* in (n,n′γ). Mult.: from $\gamma(\theta)$ in (n,γ) and RUL.
		2876.3#b	≤17#	0.0	0^+				
3083.69	2^+	2272.99 *23*	100	810.7662	2^+	M1+E2	−0.05 *1*		B(M1)(W.u.)=0.052 *13*; B(E2)(W.u.)=0.048 *23* Mult.: from $\gamma(\theta)$ in (n,n′γ) and RUL. δ: from (n,n′γ).
		3083.6#b	≤33#	0.0	0^+				
3233.26	2^+	632.71 *10*	50 *5*	2600.397	4^+				
		1156.77 *7*	94 *4*	2076.52	4^+				

$^{58}_{26}Fe_{32}$-11

Adopted Levels, Gammas (continued)

γ(^{58}Fe) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[†]	δ	Comments
3233.26	2^+	1558.71 *19*	46 *2*	1674.731	2^+			
		2422.45 *17*	100 *2*	810.7662	2^+			
		3233.2[#b]	≤2.4[#]	0.0	0^+			
3243.97	0^+	2433.05 *25*	100	810.7662	2^+	[E2]		B(E2)(W.u.)=16 +*8*−*16*
3449.7	(4^+)	849.7 *4*	100 *16*	2600.397	4^+			
		1315.6 *4*	45 *7*	2133.895	3^+	(M1)		B(M1)(W.u.)=0.0083 +*25*−*35*
		1373[b]		2076.52	4^+			Weak γ ray.
3537.97	1^+	1862.2 *5*	22 *3*	1674.731	2^+	M1+E2	−0.59 +*14*−*11*	B(M1)(W.u.)=0.047 *20*; B(E2)(W.u.)=9 *5* Mult.: from $\gamma(\theta)$ in (n,γ) and RUL. δ: from (n,γ).
		2727.24 *16*	100 *10*	810.7662	2^+	M1+E2	−0.57 +*7*−*5*	B(M1)(W.u.)=0.07 *3*; B(E2)(W.u.)=6 *3* Mult.: $\gamma(\theta)$ in (n,γ) and RUL. δ: from (n,γ).
		3540 *3*	25 *4*	0.0	0^+	[M1]		B(M1)(W.u.)=0.011 *5*
3596.90	6^+	1520.45 *20*	100 *4*	2076.52	4^+	E2		B(E2)(W.u.)=26 *10* Mult.: from $\gamma(\theta)$ in (α,pγ) and (^{13}C,3nγ) and RUL.
3629.60	2^+	2818.5[&] *3*	100[&] *3*	810.7662	2^+			
		3629.8 *4*	8.3 *21*	0.0	0^+			
3754.2	$(4)^+$	1677.7 *4*	100	2076.52	4^+			
3789.49	(5^-)	1712.94 *17*	100	2076.52	4^+			
3860.9	3^-	2186.0	100	1674.731	2^+			
		(3860.8)		0.0	0^+	[E3]		B(E3)(W.u.)=9.9 *9*
3880.1	1^+	1097.4 *3*	25 *6*	2782.14	1^+			
		3071 *2*	100 *19*	810.7662	2^+	(M1+E2)	+0.15 *9*	B(M1)(W.u.)>0.085 δ: from (n,γ).
		3881.4 *7*	88 *19*	0.0	0^+	[M1]		B(M1)(W.u.)>0.039
3886.40	6^+	289.49 *12*	55 *3*	3596.90	6^+	(M1(+E2))	<0.14	B(M1)(W.u.)>0.46 δ: deduced by the evaluators by requiring RUL(E2)=300. Not given in (^{13}C,3nγ).
		437.9 *11*	9	3449.7	(4^+)			
		1285.4 *3*	10.0 *11*	2600.397	4^+			
		1810.3 *7*	100.0 *18*	2076.52	4^+	E2		B(E2)(W.u.)=2.6 *6* Mult.: Q in (^{13}C,3nγ); E2 from RUL.
3901.62	$(3)^+$	1301.10 *11*	22 *1*	2600.397	4^+			
		1767.74 *8*	100 *4*	2133.895	3^+			
		1825.1[#b]	≤1.1[#]	2076.52	4^+			
		2226.88 *18*	9.4 *22*	1674.731	2^+			
		3090.7 *4*	3.1 *6*	810.7662	2^+			
		3901.5[#b]	≤0.6[#]	0.0	0^+			
4015.01	1^+	3204.10 *26*	100	810.7662	2^+			

$^{58}_{26}$Fe$_{32}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{58}Fe)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[†]	δ	Comments
4088.49	4^+	458.5[b] *3*		3629.60	2^+			
		1488.17 *20*	100 *22*	2600.397	4^+			
		2011.7 *3*	<100	2076.52	4^+			
4139.24	1^+	4139.1 *3*	100	0.0	0^+	[M1]		B(M1)(W.u.)=0.11 *9*
4214.64	(5^+)	1614.16 *21*	100 *6*	2600.397	4^+	D		
		2138.2 *4*	23 *7*	2076.52	4^+	D		
4297.8	2^+	3486 *3*	100 *20*	810.7662	2^+			
		4298.1 *6*	100 *20*	0.0	0^+	[E2]		B(E2)(W.u.)=5 *4*
4312.92	2^+	1436.5[#b]	≤2.6[#]	2876.34	2^+			
		1712.21 *26*	5.3 *20*	2600.397	4^+			
		2179.08 *14*	36 *3*	2133.895	3^+			
		2236.33 *15*	26 *1*	2076.52	4^+			
		2638.15 *20*	100 *3*	1674.731	2^+			
		3501.9 *8*	1.3 *13*	810.7662	2^+			
		4312.7[#b]	≤1.3[#]	0.0	0^+			
4322.5	1^+	1238.7 *7*	5.7 *29*	3083.69	2^+			
		1446.3 *4*	100 *9*	2876.34	2^+			
		4322.1 *6*	60 *11*	0.0	0^+			
4444.3	1^+	1662.5 *6*	100 *22*	2782.14	1^+			
		4443 *2*	78 *22*	0.0	0^+			
4493.1		2818.5[&] *3*	100[&]	1674.731	2^+			
		3681.7 *5*	8.3	810.7662	2^+			
4530.15	1,2	1446.53 *27*	100 *18*	3083.69	2^+			
		2855.2 *3*	64 *9*	1674.731	2^+			
		4531.0 *15*	36 *18*	0.0	0^+			
4550.37	1^+	410.9 *5*	1.40 *18*	4139.24	1^+			
		1306.0 *5*	14.0 *18*	3243.97	0^+			
		1674.2 *3*	67 *25*	2876.34	2^+	(M1+E2)	+0.17 *+10−9*	B(M1)(W.u.)=0.08 *4*; B(E2)(W.u.)=1.5 *+20−15* I_γ: from (n,γ) where this γ is multiply placed and undivided intensity is given. δ: from (n,γ).
		2876 *2*	100 *11*	1674.731	2^+	(M1+E2)	−0.31 *5*	B(M1)(W.u.)=0.021 *9*; B(E2)(W.u.)=0.48 *24* $I\gamma(2876)/I\gamma(1674)$=0.07 *9* in ($\mu^-n\gamma$) is in severe disagreement with adopted ratio of 1.5 *6*. δ: from (n,γ).
		3740[a] *3*	≈5[a]	810.7662	2^+			
4590.0	$(2^+,3,4^+)$	2513.9[b] *4*	35 *12*	2076.52	4^+			
		3778.1 *6*	100 *12*	810.7662	2^+			
4669.38	(7^+)	454.73 *14*	33.2 *19*	4214.64	(5^+)	E2		B(E2)(W.u.)=1000 *+107−330* is larger than RUL by a factor of 2 to 4. This suggests that either the reported $T_{1/2}$ is too small or branching is too large. Note that this γ is not reported in (α,pγ).

$^{58}_{26}Fe_{32}$-13

$\gamma(^{58}Fe)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[†]	δ	Comments
4669.38	(7$^+$)	782.84 *16*	100.0 *25*	3886.40	6$^+$	(M1(+E2))	−0.06 *+16−10*	B(M1)(W.u.)=0.063 *+11−20*; B(E2)(W.u.)=1 *+4−1* δ: from (α,pγ).
		1072.55 *17*	48 *3*	3596.90	6$^+$	(M1+E2)	−0.10 *+20−15*	B(M1)(W.u.)=0.0117 *+21−38*; B(E2)(W.u.)=0.2 *+8−2* δ: from (α,pγ).
		1219[b]		3449.7	(4$^+$)			I_γ: very weak, observed only in (α,pγ).
		1804.9 *3*	9.6 *9*	2864.72	(5)			Not reported in (α,pγ).
4833.89	1$^+$,2$^+$	2699.94 *25*	100	2133.895	3$^+$			
5000.23	1$^+$	3326 *2*	100 *9*	1674.731	2$^+$	(M1+(E2))	−0.02 *4*	B(M1)(W.u.)=(0.15 *6*); B(E2)(W.u.)=(0.011 *+43−11*) δ: from (n,γ).
		4189.2 *2*	5.3 *18*	810.7662	2$^+$			
		5001.0 *7*	25 *4*	0.0	0$^+$			
5220.9	1,2	2137.6 *7*	6.6 *19*	3083.69	2$^+$			
		4411 *3*	4.7 *19*	810.7662	2$^+$			
		5223 *3*	100 *3*	0.0	0$^+$			
5294.8	(1$^+$,2,3$^+$)	2513.5 *10*	100 *19*	2782.14	1$^+$			
		3162 *3*	88 *19*	2133.895	3$^+$			
		4483 *2*	31 *13*	810.7662	2$^+$			
5343.33	8$^+$	672[b]	≈28	4669.38	(7$^+$)			
		1456.90 *20*	100 *6*	3886.40	6$^+$	E2		B(E2)(W.u.)=9.3 *+21−25* Mult.: from $\gamma(\theta)$ in (^{13}C,3nγ) and RUL.
		1746.4 *3*	37 *3*	3596.90	6$^+$	E2		B(E2)(W.u.)=1.4 *4* Mult.: from $\gamma\gamma(\theta)$ in (^{13}C,3nγ) and RUL.
5417.6	(1$^+$,2,3$^-$)	3280 *3*	38 *25*	2133.895	3$^+$			
		3740[a] *3*	100[a] *38*	1674.731	2$^+$			
5502.9	(8$^+$)	1906.0 *10*	100	3596.90	6$^+$	[E2]		B(E2)(W.u.)>12
5523.0	0$^+$	4712 *3*	100	810.7662	2$^+$			
5832.08	(9$^+$)	1162.64 *18*	100	4669.38	(7$^+$)	E2		B(E2)(W.u.)=50 *+5−19* Mult.: from $\gamma(\theta)$ in (^{13}C,3nγ) and RUL.
6032.9	(9$^+$)	1364.0 *6*	100	4669.38	(7$^+$)	Q		
6282.7	(9$^+$)	939.4 *4*	100	5343.33	8$^+$	D		Mult.: from $\gamma(\theta)$ in (^{13}C,3nγ).
7242.6	(10$^+$)	959.9 *7*	100	6282.7	(9$^+$)	D		Mult.: from $\gamma(\theta)$ in (^{13}C,3nγ).
7456.7	(10$^+$)	1424.1 *4*	100 *7*	6032.9	(9$^+$)	D		
		1625.7 *5*	62 *5*	5832.08	(9$^+$)	D		
7731.3	(11$^+$)	1898.3 *4*	100	5832.08	(9$^+$)	(E2)		B(E2)(W.u.)>12 Mult.: from $\gamma(\theta)$ in (^{13}C,3nγ) and RUL.
9444.8	(12$^+$)	1710.6 *7*	25 *7*	7731.3	(11$^+$)			E_γ: poor fit, quoted energy may be a misprint. Level-energy difference=1716.7.
		1989.4 *5*	100 *7*	7456.7	(10$^+$)	Q		
9939.1		2207.7 *7*	100	7731.3	(11$^+$)			
9984.5	(12)	2253.1 *5*	100	7731.3	(11$^+$)	D		
(10044.31)	1$^-$	4521 *3*	6.8 *17*	5523.0	0$^+$			

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$\gamma(^{58}Fe)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[†]	Comments
(10044.31)	1^-	4626.3 *5*	28 *2*	5417.6	$(1^+,2,3^-)$		
		4749.6 *6*	25 *2*	5294.8	$(1^+,2,3^+)$		
		4823.7 *6*	20 *2*	5220.9	1,2		
		5043.8 *5*	91 *7*	5000.23	1^+		
		5212 *3*	5.1 *25*	4833.89	$1^+,2^+$		
		5493.6 *6*	92 *8*	4550.37	1^+		
		5599.9 *6*	9.3 *17*	4444.3	1^+		
		5691.3 *6*	21 *2*	4352.7	1^+		
		5721.5 *6*	21 *2*	4322.5	1^+		
		5746.7 *6*	20 *2*	4297.8	2^+		
		5905.3 *7*	21 *3*	4139.24	1^+		
		6028.7 *6*	10.2 *17*	4015.01	1^+		
		6162.7 *6*	28 *3*	3880.1	1^+		
		6413.9 *7*	13.6 *17*	3629.60	2^+		
		6506.0 *7*	58 *7*	3537.97	1^+		
		6960.3 *7*	89 *9*	3083.69	2^+		
		7163 *5*	5.1 *17*	2876.34	2^+		
		7261.7 *8*	97 *11*	2782.14	1^+		
		8369.1 *9*	100 *13*	1674.731	2^+		
		9232.9 *10*	19 *3*	810.7662	2^+		
		10043.2 *12*	23 *4*	0.0	0^+		
10075.4	(13^+)	2344.0 *8*	100	7731.3	(11^+)	(E2)	B(E2)(W.u.)>4.3 Mult.: from $\gamma(\theta)$ in $(^{13}C,3n\gamma)$ and RUL.
10353.8		2622.4 *7*	100	7731.3	(11^+)		
11857.0	(14^+)	2412.2 *6*	100	9444.8	(12^+)		
11911.0		1926.5 *6*	100	9984.5	(12)		
12813.3	(15^+)	2737.8 *13*	100	10075.4	(13^+)		

[†] The mult=Q and D correspond to ΔJ=2 and ΔJ=1, respectively. The mult=D+Q correspond to ΔJ=1, but in some cases it may Be ΔJ=0. When mult=E2, M1, M1+E2 or E1 is given, it follows from $\Delta(J^\pi)$. When given in square brackets, multipolarity is assumed from ΔJ^π in the present level scheme.

[‡] Values represent averages of all available data.

[#] γ looked for but not seen in ^{58}Co ε decay (1974Ti01), an upper limit of intensity is given.

[@] 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.

[&] Multiply placed with undivided intensity.

[a] Multiply placed with intensity suitably divided.

[b] Placement of transition in the level scheme is uncertain.

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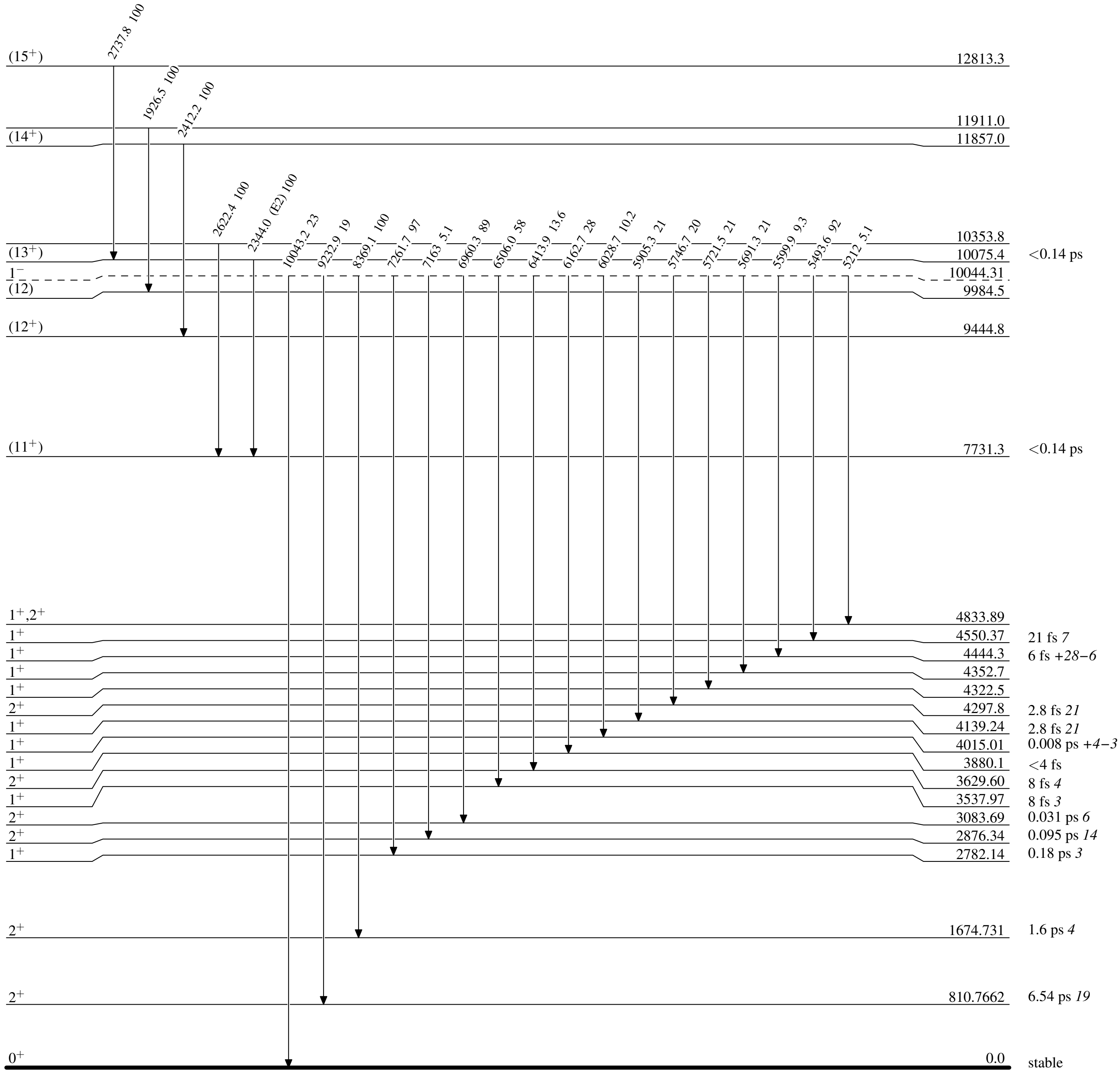
Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

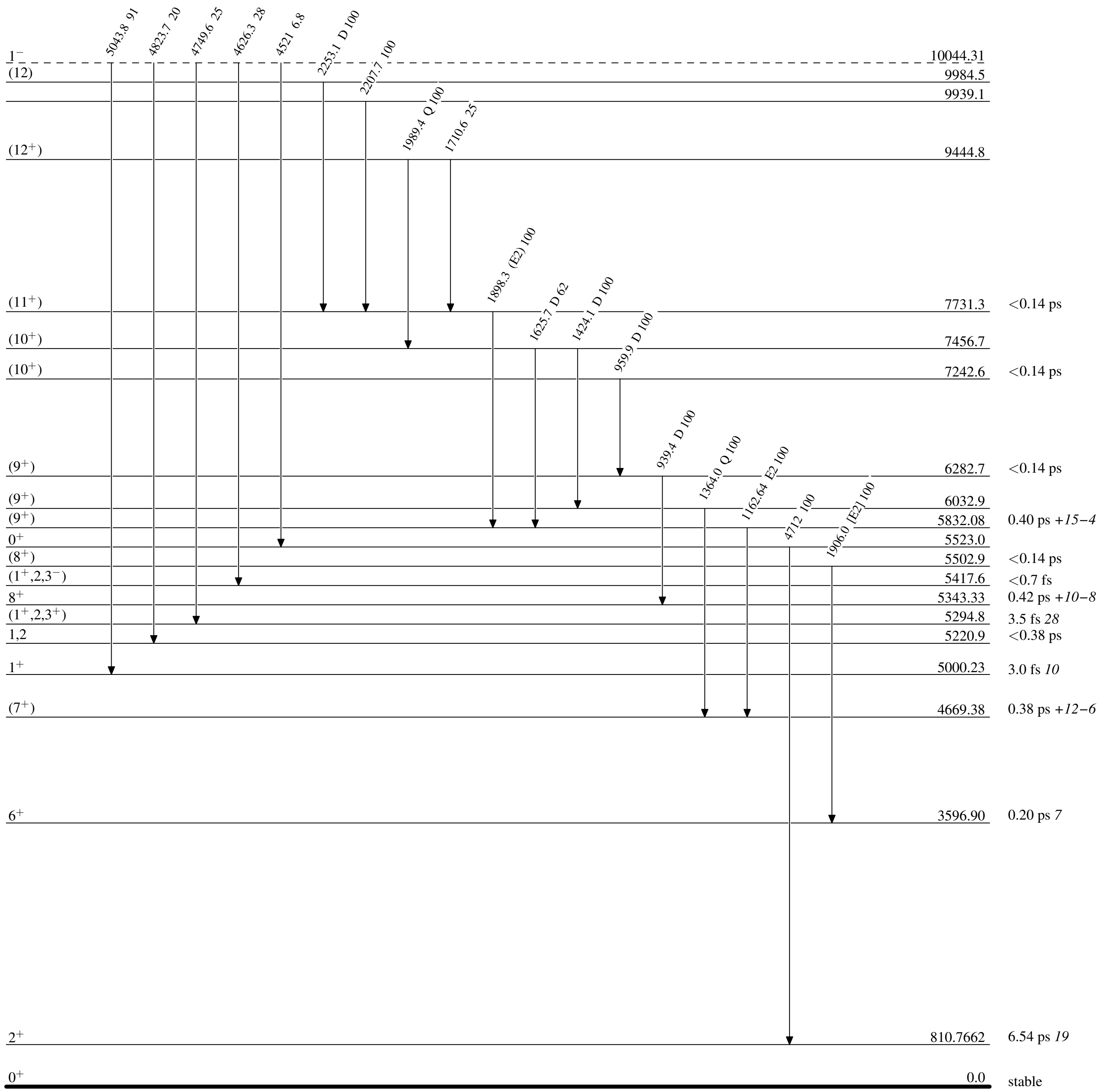


$^{58}_{26}Fe_{32}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{58}_{26}Fe_{32}$

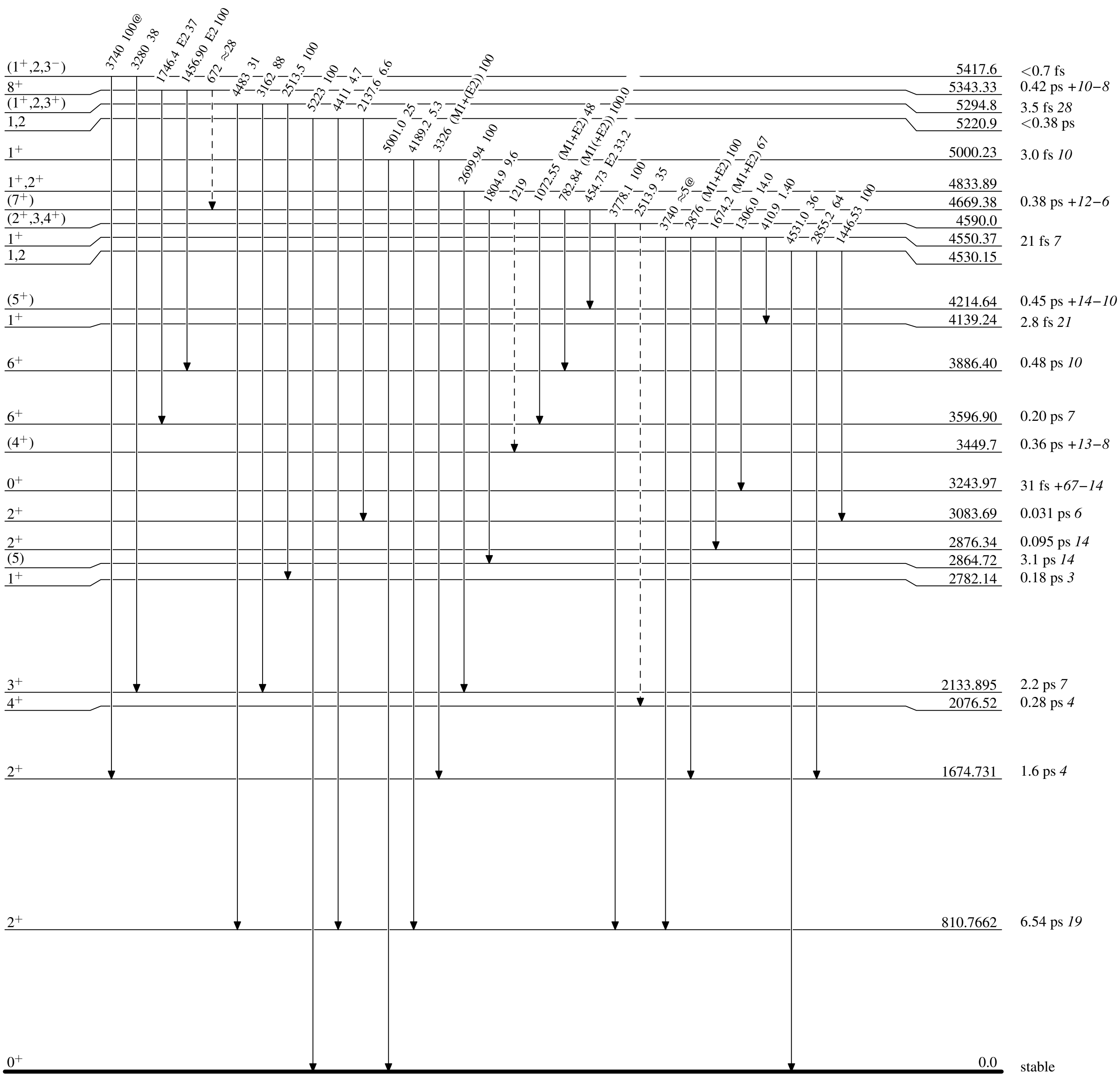
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



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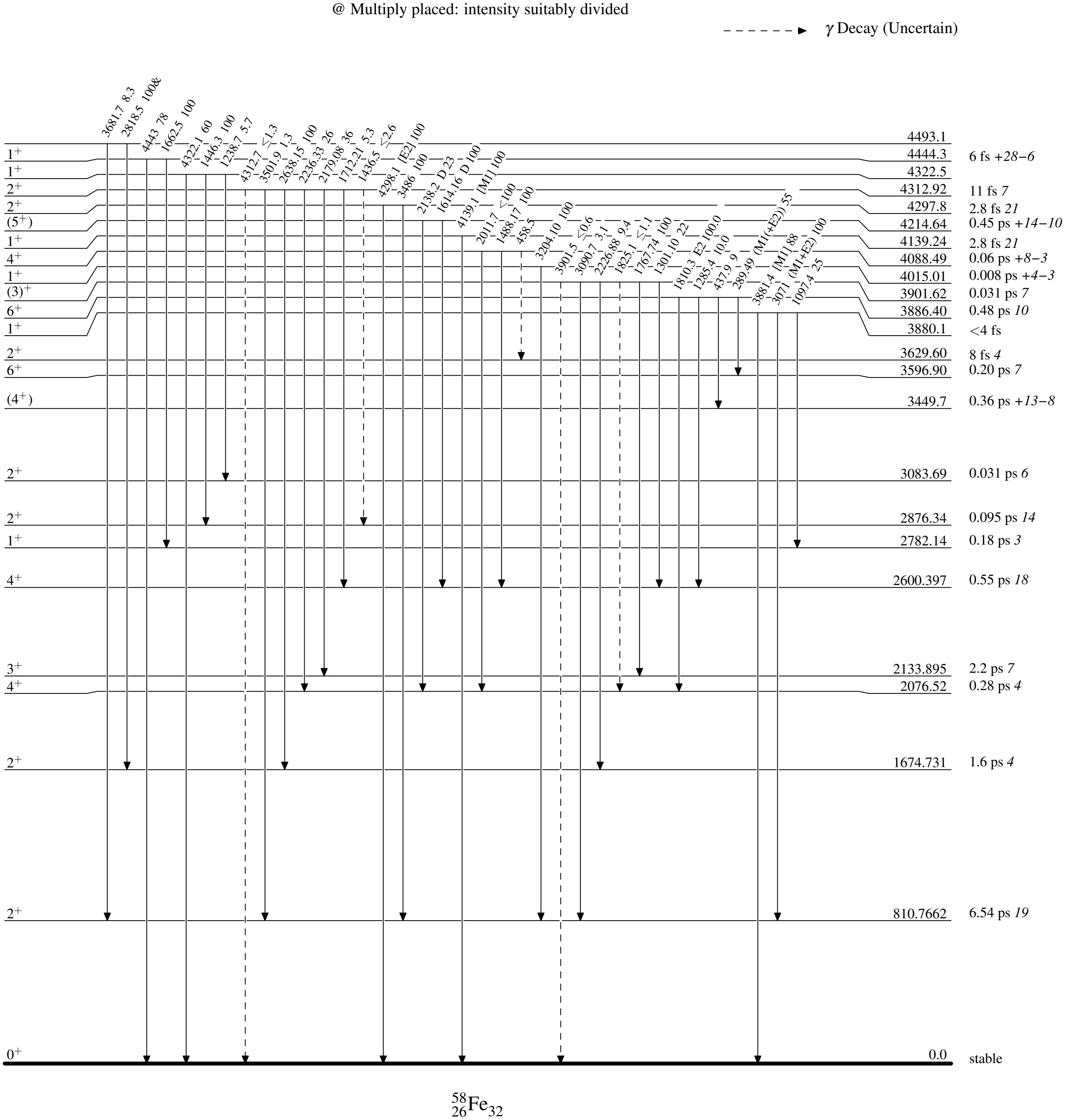
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



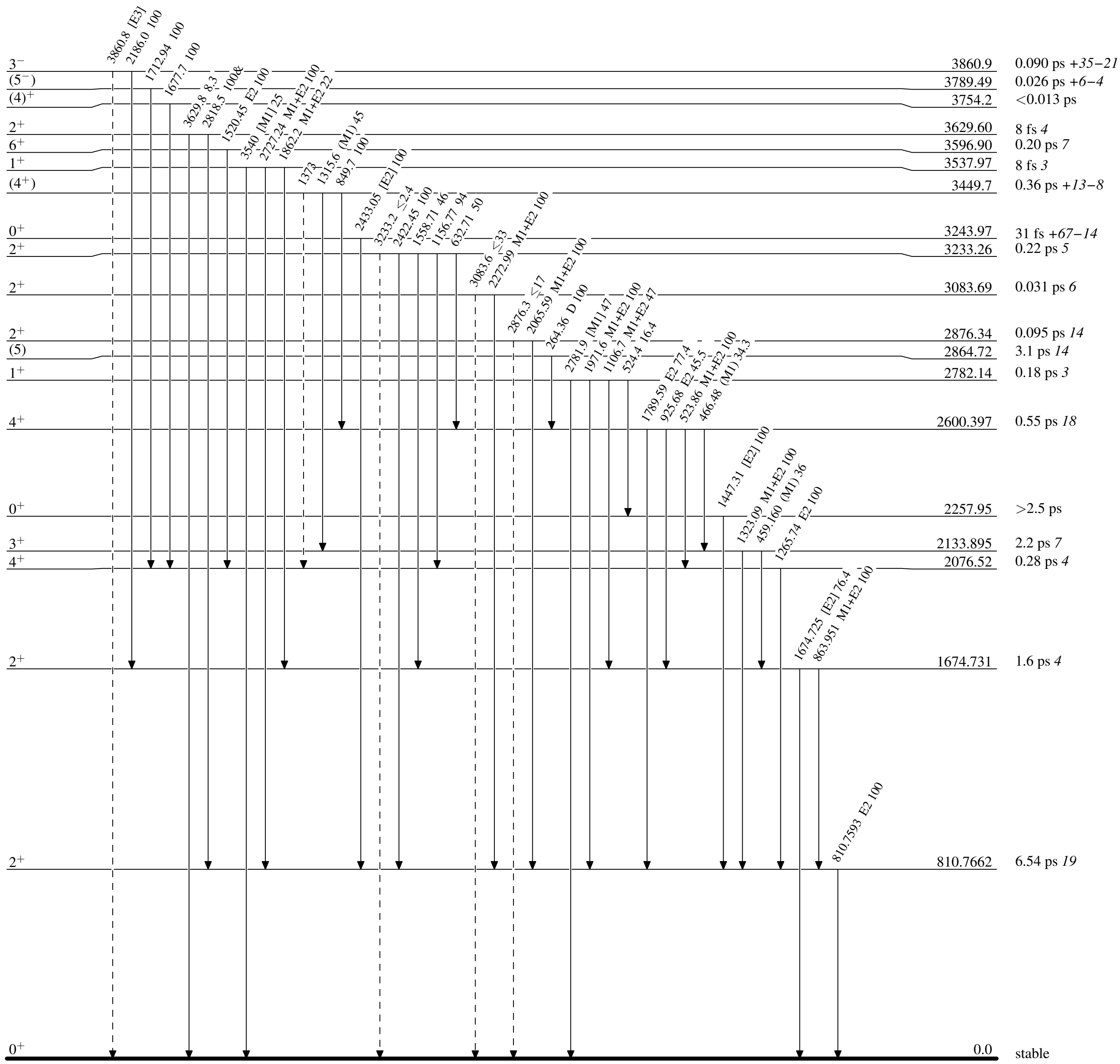
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend

γ Decay (Uncertain)



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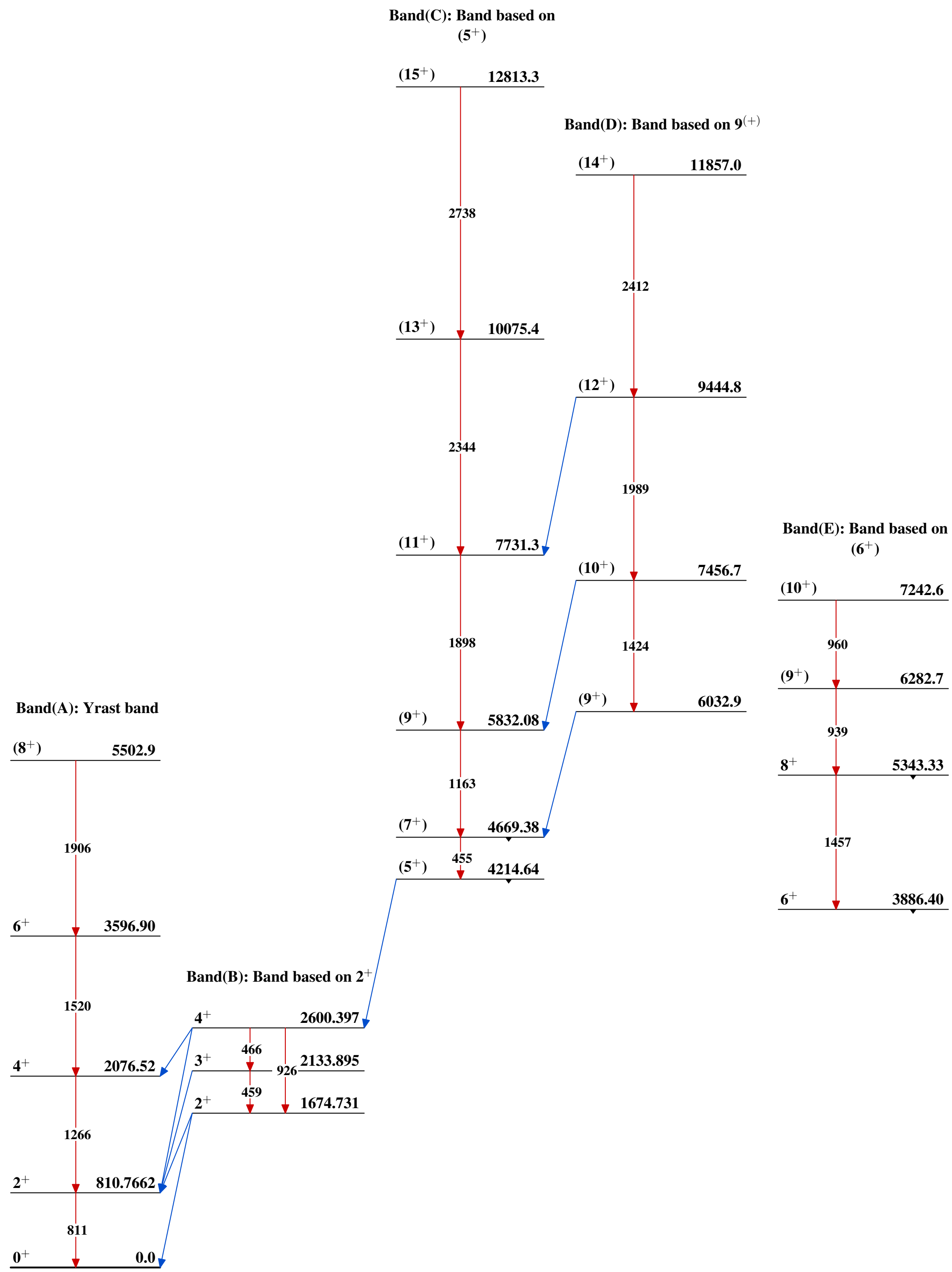
Adopted Levels, Gammas



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