Adopted Levels, Gammas

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

Q(β^-)=−3261.7 *7*; S(n)=11376.5 *6*; S(p)=6027.5 *5*; Q(α)=−7080.8 *7* 2012Wa38

Note: Current evaluation has used the following Q record −3264.2 2611376.0 *206027.6 4* −7081.0 7 1995Au04.

^{57}Fe(d,n) data set has levels from 5120 to 9910 keV measured with poor resolution, whose energy uncertainties are not known, and which may be unresolved multiplets. These are not given in Adopted Levels.

^{57}Co Levels

Cross Reference (XREF) Flags

A	^{57}Ni β^+ decay	G	^{48}Ti(^{12}C,p2nγ), ^{54}Fe(α,pγ)	M	^{60}Ni(p,α)
B	^{54}Fe(α,p), (α,pγ)	H	^{56}Fe(^{7}Li,^{6}He)	N	^{40}Ca(^{20}Ne,3pγ)
C	^{56}Fe(p,γ)	I	^{55}Mn(α,2nγ)	O	^{59}Co(p,t) E=40 MeV
D	^{56}Fe(p,γ), ^{56}Fe(p,p′γ), IAR	J	^{56}Fe(d,n) E=6, 8, 10 MeV	P	^{57}Fe(^{3}He,t) E=24.6 MeV
E	^{56}Fe(^{3}He,d), (^{3}He,dγ)	K	^{57}Fe(p,nγ) E=4.93-6.205 MeV	Q	^{58}Ni(γ,p) E=17.62 MeV
F	^{58}Ni(d,^{3}He), ^{58}Ni(pol d,^{3}He)	L	^{58}Ni(t,α) E=15 MeV	R	^{58}Ni(γ,pγ')

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	7/2$^-$	271.74 d *6*	ABC EFGHIJKLMNOPQR	%ε=100 μ=+4.720 *10*; Q=+0.52 *9* (1989Ra17); T=3/2 T$_{1/2}$: weighted average of 271.68 d *9* (1997Ma75) and 271.79 d *9*, the recommended value from 1990Ni03. Others: 271.65 d *13* (1965An07), 271.23 d *21* (1972La14), 271.77 d *5* (1980Ho17), 271.90 d *9* (1981Va11), and 271.84 d *4* (1983Wa26). J$^\pi$: 7/2 from paramagnetic resonance (1976Fu06); π=− from L(d,^{3}He)=3.
1223.98 *4*	9/2$^-$	54 fs *5*	ABC EFG I KLMN R	J$^\pi$: 9/2 from $\gamma(\theta)$ in (α,pγ); π=− from M1 to 7/2$^-$. T$_{1/2}$: weighted av of 54 fs *6* in (α,pγ), 54 fs *8* in (p,γ), 52 fs *24* in (α,2nγ), and 59 fs *21* in (^{12}C,p2nγ).
1377.663 *21*	3/2$^-$	19 ps *4*	ABC EF HIJKLM R	μ=+3.0 *6* (1989Ra17); Q=+0.22 *3* (1978LeZA,1972Ni01); T=3/2 J$^\pi$: 3/2 from $\gamma(\theta)$ in (α,pγ); π=− from L(d,^{3}He)=1. T$_{1/2}$: from $\beta\gamma$(t) in β^+ decay.
1504.826 *21*	1/2$^-$	0.21 ns *2*	ABC EF HIJK M	J$^\pi$: 1/2 from $\gamma(\theta)$ in (α,pγ); π=− from L(d,^{3}He)=1. T$_{1/2}$: from $\beta\gamma$(t) in β^+ decay.
1689.6 *5*	11/2$^-$	0.24 ps *2*	BC FG I KLMN R	J$^\pi$: 11/2 from $\gamma(\theta)$ in (α,pγ); π=− from E2 to 7/2$^-$. T$_{1/2}$: weighted av of 0.24 ps *2* in (α,pγ), 0.22 ps *8* in (α,2nγ), and 0.22 ps *7* in (^{12}C,p2nγ).
1757.606 *19*	3/2$^-$	0.27[b] ps *2*	ABC EF H JKLM QR	T=3/2 J$^\pi$: 3/2 from $\gamma(\theta)$ in (α,pγ); π=− from L(d,^{3}He)=1.
1897.40 *3*	7/2$^-$	110 fs *10*	ABC EF I KLM O QR	T=3/2 J$^\pi$: 7/2 from $\gamma(\theta)$ in (α,pγ); π=− from L(d,^{3}He)=3. T$_{1/2}$: from DSAM in (α,pγ). DSAM in (p,γ) gives 59 fs *9*.
1919.50 *3*	5/2$^-$	22[b] fs *3*	ABC E K M R	J$^\pi$: 5/2 from $\gamma(\theta)$ in (α,pγ); π=− from log *ft*=5.7 in ε decay from 3/2$^-$.
2133 *5*	3/2$^+$,5/2$^+$		F Lm	J$^\pi$: L(d,^{3}He)=2.
2133.06 *5*	5/2$^-$	0.34 ps *6*	ABC E HIJK m R	J$^\pi$: L(^{3}He,d)=3; M1 to 3/2$^-$. T$_{1/2}$: average of 0.40 ps *5* from (α,pγ) and 0.28 ps *7* from (p,γ).
2311.4 *5*	7/2$^-$	0.21 ps *4*	BC EF HIJKLM O QR	T=3/2 J$^\pi$: 7/2 from $\gamma(\theta)$ in (α,pγ); π=− from M1 to 9/2$^-$.

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Adopted Levels, Gammas (continued)

^{57}Co Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
				$T_{1/2}$: weighted av of DSAM in (α,pγ) and (α,2nγ). DSAM in (p,γ) gives 0.14 ps *3*.
2479.0 *10*			C	
2486.1 *6*	9/2⁻	59[b] fs *8*	BC F KLM	Jπ: 9/2⁻,11/2⁻ from L(d,^{3}He)=5; dipole to 7/2 excludes 11/2⁻.
2514.0 *10*			C	
2524.1 *6*	(13/2)⁻	0.26 ps *5*	B G I K MN	Jπ: 9/2 to 13/2 from γ(θ) and DCO in (^{12}C,p2nγ). δ(11/2)=−0.63 *10* and RUL probably exclude J=11/2. $J^\pi \neq 9/2$ from γ deexcitation and stronger excitation in (^{12}C,2npγ) than in (α,pγ). π=− from M1 to 11/2⁻. $T_{1/2}$: from DSAM in (α,pγ). Others: 0.08 ps *3* from ^{55}Mn(α,2nγ) and 0.11 ps *4* from ^{48}Ti(^{12}C,p2nγ).
2559.8 *6*	(7/2⁻,9/2,11/2⁻)	0.45 ps *8*	BC I K MN	Jπ: from d, E2 transitions to 7/2⁻,11/2⁻. $T_{1/2}$: weighted av of 0.51 ps *10* from (α,pγ), 0.36 ps *15* from (α,2nγ), and 0.35 ps *21* from (p,γ).
2611.2 *10*	7/2⁻	85 fs *9*	BC F KLM O	Jπ: 7/2 from γ(θ) in (p,γ); π=− from L(d,^{3}He)=3. $T_{1/2}$: from DSAM in (α,pγ).
2614.5 *10*			C	
2723.0 *10*			BC f KLM	2728, L=3, state in (d,^{3}He) may correspond to this state or the 2731 state.
2730.98 *4*	3/2⁻,5/2	91[b] fs *12*	ABC f K M R	Jπ: log $f^{1u}t$=7.7 from 3/2⁻; γ to 7/2⁻.
2743.5 *12*	(9/2,11/2,13/2)	47[c] fs *21*	BC K M R	Jπ: (D) to 11/2⁻.
2804.293 *22*	(3/2⁻,5/2)	37[b] fs *7*	ABC K M R	Jπ: (5/2) from d to 3/2⁻, and γ to 7/2⁻.
2879.2 *6*	3/2⁻	111[c] fs *21*	BC EF H JK M R	Jπ: 3/2 from γ(θ) in (α,pγ); π=− from E2 to 7/2⁻.
2980.9 *7*	1/2⁺		B EF KLM R	T=(1/2,3/2) Jπ: L(d,^{3}He)=0.
2982.05			C	E(level): from EL=1897.45 and the 1084.6 γ seen in (p,γ). Jπ: γ to 7/2⁻ gives J^π=3/2⁻,5/2,7/2,9/2,11/2⁻.
3108.16 *4*	(3/2)⁻	54[c] fs *12*	ABC E JK M R	Jπ: 1/2⁻,3/2⁻ from L(^{3}He,d)=1; γ to 7/2⁻ excludes 1/2⁻.
3121.4 *9*			I K M	
3164.9 *11*			KlM	
3177.39 *4*	5/2⁻,7/2⁻[e]	152[c] fs *35*	ABC E H JKlM R	
3184.2 *10*	3/2⁺,5/2⁺[d]		C F K M	Jπ: γ to 7/2⁻ suggests 5/2⁺ over 3/2⁺.
3246.3 *10*			KlM	
3262.7 *7*	(3/2⁻,5/2,7/2⁻)		Bc KlM R	Jπ: gammas to 3/2⁻ and 7/2⁻.
3272.2 *11*	5/2⁻,7/2⁻[d]		c EF H J M	
3296			C	
3343 *10*			B l	
3356.7 *7*	3/2⁻		C JKlM	T=(3/2) Jπ: 3/2 from γ(θ) of primary γ's in (p,γ); π=− from L(d,n)=1.
3365 *5*	1/2⁻,3/2⁻[d]		EF H l	
3393.7 *10*			B M	
3431 *2*			BC	
3460.6 *6*	(3/2⁻,5/2,7/2⁻)		C k M	Jπ: gammas to 3/2⁻ and 7/2⁻.
3468.6 *7*	3/2⁻		C EF H Jk	Jπ: 3/2 from γ(θ) of primary γ's in (p,γ); π=− from L(d,^{3}He)=1.
3522.1 *12*			C KlM	
3540.4 *10*			BC KlM	
3553.9 *7*	3/2⁺,5/2⁺[d]		C F KlM	T=(3/2)
3622.3 *11*			B M	
3665 *10*			B e Kl	

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Adopted Levels, Gammas (continued)

^{57}Co Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
3671.6 *7*			C E KlM	
3681.3 *11*	5/2−,7/2−[d]		eF klM	
3701.1 *10*	(7/2−)		BC e H l	Jπ: from J-dependence of small angle cross-section in ^{56}Fe(^{7}Li,^{6}He); data fit both 5/2−,7/2−; however, rise in cross section at forward angles tends to favor 7/2−.
3719.7 *10*			c e M	
3722	(1/2+)		c J	Jπ: L(d,n)=(0).
3728 *20*	7/2+,9/2+[e]		eF	
3762.0 *11*			b K M	
3769.6 *13*			b M	
3833.7 *11*			B M	
3851 *2*			C e k	
3854.2 *6*	3/2+,5/2+[e]		C e k M	
3901.1 *10*			BC l	
3909.2 *12*			lM	
3918.1 *10*	5/2−,7/2−[d]		C F lM	
3921 *20*	1/2−,3/2−		E J l	Jπ: L(d,n)=L(^{3}He,d)=1.
3973 *10*			B	
3990.9 *7*	5/2		C H K M	Jπ: 5/2 assigned to the 3993 level from γ(θ) of primary capture γ rays from E(p)=1408, J=5/2 resonance in (p,γ). However, $J^{\pi}=7/2^{-}$ assumed to extract spectroscopic factors in (^{7}Li,^{6}He) gives a better fit than $J^{\pi}=5/2^{-}$.
3999.5 *10*			C E J M	Jπ: L(d,n)=1+3 unresolved multiplet; 4001 in (p,γ); L(^{3}He,d)=(1), at 4002 *15*.
4036.0 *12*	(15/2)	0.05 ps *2*	b G I l N	Jπ: 11/2 to 15/2 from γ(θ) and DCO. J≠13/2 from δ and RUL. J=15/2 favored from unique decay to (13/2) state and very weak excitation in (α,pγ). $T_{1/2}$: from DSAM in (α,2nγ). Other: 0.07 ps *5* from (^{12}C,p2nγ).
4036.7 *6*			b KlM	
4046.1 *13*			C M	
4057.5 *14*			M	
4064 *20*	3/2−		C E	Jπ: 3/2 from γ(θ) of primary γ's from E(p)=1416, J=5/2 resonance; π=− from L(^{3}He,d)=1.
4111.2 *11*			M	
4186.9 *12*			M	
4195.2 *10*	1/2−,3/2−[e]		C E J	
4216.8 *12*			M	
4237.7 *10*			C K M	
4250.8 *12*	5/2−,7/2−[e]		E H J M	Jπ: (7/2−) from J-dependence of small angle cross section in ^{56}Fe(^{7}Li,^{6}He).
4271.6 *13*			M	
4284.1 *13*			e j M	J=(3/2−) from J-dependance of small angle cross section in ^{56}Fe(^{7}Li,^{6}He) at 4295; L(^{3}He,d)=1, at 4295 *15*.
4297.1 *10*			C e H j M	Jπ: L(d,n)=(1+3) for an unresolved multiplet at 4295; L(^{3}He,d)=1, at 4295 *15*.
4308.0 *13*			e M	
4318 *5*	(3/2+,5/2+)[d]		F	
4329.5 *12*			M	
4356.8 *12*			M	
4377.4 *6*			MN	
4391.3 *13*			J M	
4398.7 *14*			M	
4416.2 *12*			M	

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Adopted Levels, Gammas (continued)

^{57}Co Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
4438.1 *12*			M	
4447.9 *13*			M	
4454 *20*			E	
4465.6 *12*			J M	
4475.1 *20*			M	
4496.8 *12*			e H M	
4511.4 *15*			e M	
4519.9 *14*			e M	
4530 *5*	1/2$^-$,3/2$^-$[d]		eF	
4550.1 *12*			M	
4575.8 *18*			M	
4586.3 *8*	9/2$^{(+)}$		C H M	Jπ: 9/2 from γ(θ) of primary capture γ rays in (p,γ); π=(+) from comparison of δ for primary transition from the E(p)=3720 Jπ=9/2$^+$ resonance with single particle estimates.
4597.3 *8*	9/2$^+$		C E M	Jπ: 9/2 from γ(θ) in (p,γ); π=+ from L(^{3}He,d)=4.
4608.4 *23*			C e J M	
4619.5 *14*	(3/2$^+$,5/2$^+$)[d]		eF M	
4644.9 *13*			M	
4659.2 *13*			M	
4674.6 *10*	5/2$^+$		C E H J M	Jπ: 5/2 from γ(θ) of primary γ′s in (p,γ); π=+ from L(d,n)=2.
4699.7 *6*			MN	
4719.5 *13*			E M	
4752.7 *13*			M	
4761.9 *14*			M	
4772.1 *15*	(3/2$^+$,5/2$^+$)[d]		F M	
4780	5/2$^-$,7/2$^-$		J	Jπ: L(d,n)=3.
4793.4 *13*			e M	
4800.5 *8*			e MN	
4814.5 *6*	(17/2)	9.9 ps *2*	G I N	Jπ: 17/2 favored from possible J=11/2-17/2 from stretched quadrupole type of γ(θ) of 2294γ. $T_{1/2}$: from RDM in (^{12}C,p2nγ).
4845.3 *6*			MN	
4852.8 *17*			M	
4871.6 *14*			M	
4880.9 *14*	(5/2$^-$,7/2$^-$)[d]		F M	
4911.4 *13*			M	
4921.9 *14*			M	
4933.7 *15*	1/2$^+$[e]		E M	
4948.1 *15*			M	
4959.6 *14*			M	
4971.0 *15*			M	
4981?			E	
5057 *5*	(1/2$^-$,3/2$^-$)[d]		F	
5103 *5*	3/2$^+$,5/2$^+$[d]		F M	
5138			E	
5157 *5*	(1/2$^-$,3/2$^-$)[d]		F	
5167			E	
5222 *5*	3/2$^+$,5/2$^+$[d]		F	
5223 *15*	1/2$^+$[e]		E	
5296			E	
5384 *5*	1/2$^-$,3/2$^-$[e]		EF	
5425 *20*	1/2$^-$,3/2$^-$[e]		E	
5434.6 *6*			N	

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Adopted Levels, Gammas (continued)

^{57}Co Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
5459 *5*	$(5/2^-,7/2^-)^d$		F	
5524 *5*	$1/2^-,3/2^-{}^d$		EF M	
5559 *20*	$1/2^-,3/2^-{}^e$		E	
5571.5 *10*			N	
5638 *5*	$1/2^-,3/2^-{}^e$		EF	
5653 *20*			E	
5707.3 *7*			N	
5715 *5*	$(1/2^-,3/2^-)^d$		EF	
5743 *20*	$1/2^-,3/2^-{}^e$		E	
5756.6 *7*			N	
5799 *20*			E	
5845.9 *7*			N	
5877 *5*	$3/2^+,5/2^+{}^d$		EF L	
5919.0 *8*	(19/2)	0.13 ps *4*	G I N	Jπ: 15/2,19/2 from γ(θ) and DCO. 19/2 from unique decay to (17/2) state. $T_{1/2}$: weighted av of DSAM in (α,2nγ) and (^{12}C,p2nγ).
5987 *5*	$3/2^+,5/2^+{}^d$		EF l	
6013 *20*	$3/2^+,5/2^+$		E l	T=3/2 Jπ: from L(t,α)=2.
6093 *20*			E	
6148 *5*	$1/2^-,3/2^-{}^e$		EF	
6184 *20*			E	
6228 *5*			F	
6268 *20*	$1/2^-,3/2^-{}^e$		E	
6306 *5*	$1/2^-,3/2^-{}^d$		F	
6344 *20*			E	
6391	$1/2^-,3/2^-{}^e$		E	
6398 *5*	$3/2^+,5/2^+{}^d$		F	
6442.1 *7*			N	
6492 *20*			E	
6504	$(5/2^-,7/2^-)^e$		E	
6518.8 *7*			N	
6540			E	
6594 *20*			E	
6671 *5*	$(3/2^+,5/2^+)^d$		EF	
6739 *20*			E	
6768 *20*			E	
6817 *5*	$(3/2^+,5/2^+)^d$		F	
6859.3 *7*			E N	
6901 *5*	$(1/2^-,3/2^-)^d$		EF	
6976.5 *10*			N	
7020 *20*	$(1/2^-,3/2^-)^e$		E	
7066			E	
7115 *20*	$(1/2^-,3/2^-)^e$		E	
7162 *20*	$1/2^-,3/2^-{}^e$		E	
7187	$1/2^-,3/2^-{}^e$		E	
7230 *20*			M	
7254[‡] *2*	$3/2^-{}^f$		De	E(level): resonance observed at E(p)(lab)=1248 *2*.
7267[‡] *2*	$3/2^-{}^f$		De	E(level): resonance observed at E(p)(lab)=1262 *2*.
7272[‡] *2*	$3/2^-{}^f$		De P	T=5/2 E(level): resonance observed at E(p)(lab)=1267 *2*.

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Adopted Levels, Gammas (continued)

^{57}Co Levels (continued)

E(level)[†]	Jπ	XREF	Comments
7288 *7*	(3/2⁻)	e P	T=5/2 Jπ: if IAS(^{57}Fe 14.4).
7296 *20*		e	
7324 *20*		E	
7367 *20*		E	
7400		H	
7411[#] *3*	5/2(−)*g*	De	
7419[#] *3*	5/2(−)*g*	De	
7423[#] *3*	5/2(−)*g*	De	
7480 *20*		E	
7512.2 *7*		N	
7527.5 *10*		E N	
7598 *2*	3/2⁻*f*	D	E(level): resonance observed at E(p)(lab)=1599 *2*.
7622[@] *2*	3/2⁻*f*	D	E(level): resonance observed at E(p)(lab)=1623 *2*.
7642[@] *2*	3/2⁻*f*	D	E(level): resonance observed at E(p)(lab)=1643 *2*.
7648[@] *2*	3/2⁻*f*	D	E(level): resonance observed at E(p)(lab)=1649 *2*.
7663	(3/2)⁻	E	Jπ: L(^{3}He,d)=1. *3/2*⁻ if IAS(^{57}Fe 367).
7708		E	
7782.4 *7*		E N	
7809	3/2⁺,5/2⁺*e*	E	
7839	3/2⁺,5/2⁺*e*	E	
7982		E	
7992.7 *9*		N	
8056	3/2	D	Jπ: from γ(θ) in ^{56}Fe(p,γ). E(level): resonance observed at E(p)(lab)=2065.
8087.1 *8*		N	
8409.6 *7*		N	
8632.9 *7*		N	
8874.3 *11*		N	
9280.0 *7*		N	
9317.5 *8*		N	
9600		H	
9682[&] *1*	9/2⁺*f*	D	E(level): resonance observed at E(p)(lab)=3720 *1*.
9689[&] *1*	9/2⁺*f*	D	E(level): resonance observed at E(p)(lab)=3727 *1*.
9735[*a*] *1*	5/2⁺*f*	D	E(level): resonance observed at E(p)(lab)=3774 *1*.
9755[*a*] *1*	5/2⁺*f*	D	E(level): resonance observed at E(p)(lab)=3794 *1*.
10077.1 *9*		N	
10294.4 *9*		N	
11070.1 *10*		N	
11291.5 *11*		N	

[†] From ^{57}Ni β⁺ decay data for levels at 3177 and below; and from (α,p), (α,pγ), (p,γ), (p,α), (^{3}He,d), (d,^{3}He) reaction data sets for others.
[‡] Split analog states of the 14 level in ^{57}Fe.
[#] Split analog states of the 136 level in ^{57}Fe.
[@] Split analog states of the 367 level in ^{57}Fe.
[&] Split analog states of the 2455 level in ^{57}Fe.
[*a*] Split analog states of the 2506 level in ^{57}Fe.
[*b*] Weighted av of DSAM in (α,pγ) and (p,γ).
[*c*] From DSAM in (p,γ).

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Adopted Levels, Gammas (continued)

^{57}Co Levels (continued)

[d] From angular momentum transfer in (d,^{3}He).
[e] From angular momentum transfer in (^{3}He,d).
[f] From $\gamma(\theta)$ of capture γ rays in proton resonances and RUL.
[g] From $\gamma(\theta)$ of primary γ's in ^{56}Fe(p,γ); π=(−) from L(^{3}He,d)=3 for 7432 *20*.

Adopted Levels, Gammas (continued)

γ(^{57}Co)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.	δ[#]	α[d]	Comments
1223.98	9/2$^-$	1224.00 *4*	100	0.0	7/2$^-$	M1+E2[b]	+0.26[@] *1*		B(M1)(W.u.)=0.208 *20*; B(E2)(W.u.)=18.5 *22*
1377.663	3/2$^-$	1377.63 *3*	100	0.0	7/2$^-$	(E2)[&]			B(E2)(W.u.)=0.46 *10*
1504.826	1/2$^-$	127.164 *3*	100	1377.663	3/2$^-$	M1+E2	+0.008[@] *14*	0.0221 *1*	α(K)=0.0194 *1*; α(L)=0.00196 B(M1)(W.u.)=0.050 *5*; B(E2)(W.u.)=0.4 *+14−4* Mult.: from α(K)exp in β$^+$ decay.
1689.6	11/2$^-$	465.7	100 *4*	1223.98	9/2$^-$	(M1+E2)[c]	+0.08[@] *1*		B(M1)(W.u.)=0.49 *5*; B(E2)(W.u.)=28 *8*
		1689.4	85 *4*	0.0	7/2$^-$	E2[b]			B(E2)(W.u.)=6.0 *6*
1757.606	3/2$^-$	252.5	0.5	1504.826	1/2$^-$				
		379.94 *2*	1	1377.663	3/2$^-$				
		1757.55 *3*	100 *2*	0.0	7/2$^-$	E2[b]			B(E2)(W.u.)=9.4 *8*
1897.40	7/2$^-$	673.44 *4*	100 *2*	1223.98	9/2$^-$	(M1+E2)[c]	+0.02[@] *1*		B(M1)(W.u.)=0.35 *4*; B(E2)(W.u.)=0.6 *7*
		1897.42 *4*	87 *8*	0.0	7/2$^-$	(M1(+E2))[c]	−0.04 *22*		B(M1)(W.u.)=0.0136 *19*; B(E2)(W.u.)=0.01 *+14−12* δ: from ^{54}Fe(α,pγ).
1919.50	5/2$^-$	161.86 *3*	0.20 *1*	1757.606	3/2$^-$	(M1)[&]		0.0118	α(K)=0.0105; α(L)=0.00104 B(M1)(W.u.)=0.47 *7*
		541.9 *1*	0.03	1377.663	3/2$^-$				
		696.0 *4*	0.01 *1*	1223.98	9/2$^-$				
		1919.52 *5*	100 *3*	0.0	7/2$^-$	M1+E2[b]	−0.23[@] *3*		B(M1)(W.u.)=0.134 *20*; B(E2)(W.u.)=3.8 *11*
2133.06	5/2$^-$	628.9	4 *1*	1504.826	1/2$^-$	E2[b]			B(E2)(W.u.)=43 *14*
		755.3 *1*	17 *2*	1377.663	3/2$^-$	M1+E2[b]	−0.35[@] *+18−9*		B(M1)(W.u.)=0.019 *5*; B(E2)(W.u.)=8 *8*
		2133.04 *5*	100 *2*	0.0	7/2$^-$	(M1(+E2))[c]	0.00[@] *5*		B(M1)(W.u.)=0.0055 *10*
2311.4	7/2$^-$	933.8	14 *3*	1377.663	3/2$^-$	E2[b]			B(E2)(W.u.)=29 *9*
		1087.6	100 *3*	1223.98	9/2$^-$	M1+E2[b]	+0.13[@] *2*		B(M1)(W.u.)=0.056 *11*; B(E2)(W.u.)=1.6 *6*
		2311.3	29 *4*	0.0	7/2$^-$	(M1(+E2))[c]	−0.4[@] *6*		B(M1)(W.u.)=0.0015 *7*; B(E2)(W.u.)=0.09 *+23−9*
2486.1	9/2$^-$	588.9	17 *5*	1897.40	7/2$^-$	(M1)[&]			B(M1)(W.u.)=0.20 *7*
		796.4	18 *6*	1689.6	11/2$^-$	(M1,E2)[&]			B(M1)(W.u.)=0.043 *16*; B(E2)(W.u.)=1.4×10^2 *5*
		1262.1	18 *6*	1223.98	9/2$^-$	(M1,E2)[&]			B(M1)(W.u.)=0.011 *4*; B(E2)(W.u.)=14 *5*
		2485.8	100 *9*	0.0	7/2$^-$	(M1,E2)[&]			B(M1)(W.u.)=0.0079 *15*; B(E2)(W.u.)=2.5 *5*
2524.1	(13/2)$^-$	834.2	100	1689.6	11/2$^-$	M1+E2	−0.15[@] *7*		B(M1)(W.u.)=0.14 *3*; B(E2)(W.u.)=9 *9* Mult.: from γ(θ) in ^{48}Ti(^{12}C,p2nγ) and RUL.
2559.8	(7/2$^-$,9/2,11/2$^-$)	870.2	38 *12*	1689.6	11/2$^-$	D,E2[a]			
		1335.9	100 *17*	1223.98	9/2$^-$	D,E2[a]			

Adopted Levels, Gammas (continued)

γ(^{57}Co) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.	Comments
2559.8	(7/2$^-$,9/2,11/2$^-$)	2559.6	100 *17*	0.0	7/2$^-$	D,E2[a]	
2611.2	7/2$^-$	691.6[e]		1919.50	5/2$^-$		
		2611.1	100	0.0	7/2$^-$		
2723.0		1499.0	100	1223.98	9/2$^-$		
2730.98	3/2$^-$,5/2	2730.91 *4*	100	0.0	7/2$^-$	D,E2	Mult.: from RUL.
2743.5	(9/2,11/2,13/2)	1053.9	100	1689.6	11/2$^-$	(D)[a]	
2804.293	(3/2$^-$,5/2)	906.98 *5*	46 *2*	1897.40	7/2$^-$	D[a]	
		1046.68 *3*	100 *3*	1757.606	3/2$^-$	D[a]	
		2804.20 *3*	73 *3*	0.0	7/2$^-$	D,E2[a]	
2879.2	3/2$^-$	959.8	100 *18*	1919.50	5/2$^-$		
		1121.4	50 *15*	1757.606	3/2$^-$		
		2879.1	100 *18*	0.0	7/2$^-$	E2[b]	B(E2)(W.u.)=0.79 *23*
2980.9	1/2$^+$	847.8[e]		2133.06	5/2$^-$		
		1223.3		1757.606	3/2$^-$		
		1603.2		1377.663	3/2$^-$		
3108.16	(3/2)$^-$	304.1 *1*	4 *1*	2804.293	(3/2$^-$,5/2)		
		1350.52 *6*	4 *2*	1757.606	3/2$^-$		
		1603.28 *6*	8 *1*	1504.826	1/2$^-$		
		1730.44 *6*	100.0 *5*	1377.663	3/2$^-$		
		3108.3		0.0	7/2$^-$		
3121.4		810.1[e]		2311.4	7/2$^-$		
		1897.4[e]		1223.98	9/2$^-$		
3164.9		1266[e]		1897.40	7/2$^-$		
		3165[e]		0.0	7/2$^-$		
3177.39	5/2$^-$,7/2$^-$	1279.99 *6*	87 *7*	1897.40	7/2$^-$		
		3177.28 *5*	100 *5*	0.0	7/2$^-$		
3184.2	3/2$^+$,5/2$^+$	1806.4[e]		1377.663	3/2$^-$		
		3184.1		0.0	7/2$^-$		
3246.3		2022.3[e]		1223.98	9/2$^-$		
3262.7	(3/2$^-$,5/2,7/2$^-$)	1505.2	100 *10*	1757.606	3/2$^-$		
		3262.4	92 *10*	0.0	7/2$^-$		
3356.7	3/2$^-$	1979.0		1377.663	3/2$^-$		
		3356.6		0.0	7/2$^-$		
3460.6	(3/2$^-$,5/2,7/2$^-$)	1541		1919.50	5/2$^-$		
		2083		1377.663	3/2$^-$		
		3460.5		0.0	7/2$^-$		
3468.6	3/2$^-$	1549		1919.50	5/2$^-$		
		2091		1377.663	3/2$^-$		
3522.1		1036		2486.1	9/2$^-$		
3540.4		560[e]		2980.9	1/2$^+$		

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Adopted Levels, Gammas (continued)

γ(^{57}Co) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.	δ[#]	Comments
3553.9	3/2$^+$,5/2$^+$	1796.3	85	1757.606	3/2$^-$			
		2176.2	100	1377.663	3/2$^-$			
3671.6		1774.1		1897.40	7/2$^-$			
		3671.5		0.0	7/2$^-$			
3701.1	(7/2$^-$)	3701	100	0.0	7/2$^-$			
3719.7		3719.6	100	0.0	7/2$^-$			
3854.2	3/2$^+$,5/2$^+$	2349.3	≈100	1504.826	1/2$^-$			
		2476.4	≈100	1377.663	3/2$^-$			
		3854.1		0.0	7/2$^-$			
3901.1		3901	100	0.0	7/2$^-$			
3918.1	5/2$^-$,7/2$^-$	2413.2		1504.826	1/2$^-$			
3990.9	5/2	2233.2	11	1757.606	3/2$^-$			
		3990.8	100	0.0	7/2$^-$	D+Q[c]	+0.06 *8*	δ: from ^{56}Fe(p,γ).
3999.5		2241.8		1757.606	3/2$^-$			
		2495[e]		1504.826	1/2$^-$			
4036.0	(15/2)	1511.9	100	2524.1	(13/2)$^-$	D(+Q)	+0.03[@] *+7−13*	Mult.: from γ(θ) in ^{48}Ti(^{12}C,p2nγ).
4036.7		4036.5		0.0	7/2$^-$			
4195.2	1/2$^-$,3/2$^-$	4195	100	0.0	7/2$^-$			
4237.7		4237.5		0.0	7/2$^-$			
4297.1		4296.9		0.0	7/2$^-$			
4377.4		2687.4 *5*		1689.6	11/2$^-$			
4586.3	9/2$^{(+)}$	2275	100	2311.4	7/2$^-$			
		4586	54	0.0	7/2$^-$			
4597.3	9/2$^+$	2286	100 *40*	2311.4	7/2$^-$	(E1(+M2))[c]	−0.18 *18*	δ: from ^{56}Fe(p,γ).
		4597	100 *50*	0.0	7/2$^-$			
4674.6	5/2$^+$	3296.8		1377.663	3/2$^-$			E_γ: from level energy difference.
4699.7		2175.9 *5*		2524.1	(13/2)$^-$			
		3010.1 *5*		1689.6	11/2$^-$			
4800.5		2240.7 *5*		2559.8	(7/2$^-$,9/2,11/2$^-$)			
4814.5	(17/2)	115.1 *5*		4699.7				
		777.8 *5*		4036.0	(15/2)			
		2290.3 *5*		2524.1	(13/2)$^-$	(Q)		Mult.: stretched Q from γ(θ) in (^{12}C,p2nγ).
4845.3		467.7 *5*		4377.4				
		2320.9 *5*		2524.1	(13/2)$^-$			
		3156.0 *5*		1689.6	11/2$^-$			
5434.6		589.4 *5*		4845.3				
		1056.9 *5*		4377.4				
		2910.7 *5*		2524.1	(13/2)$^-$			
5571.5		771.0 *5*		4800.5				
5707.3		1007.3 *5*		4699.7				
		3183.1 *5*		2524.1	(13/2)$^-$			

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Adopted Levels, Gammas (continued)

$\gamma(^{57}Co)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [†‡]	E_f	J_f^π	Mult.	δ [#]	Comments
5756.6		322.2 *5*		5434.6				
		1057.0 *5*		4699.7				
5845.9		1809.4 *5*		4036.0	(15/2)			
		3321.4 *5*		2524.1	$(13/2)^-$			
5919.0	(19/2)	1104.5 *5*	100	4814.5	(17/2)	M1+E2 [b]	+0.16 [@] *7*	B(M1)(W.u.)=0.12 *4*; B(E2)(W.u.)=5 *5*
6442.1		596.1 *5*		5845.9				
		2405.2 *5*		4036.0	(15/2)			
6518.8		761.8 *5*		5756.6				
6859.3		1151.8 *5*		5707.3				
6976.5		1057.5 *5*		5919.0	(19/2)			
7512.2		1070.0 *5*		6442.1				
7527.5		1608.4 *5*		5919.0	(19/2)			
7782.4		1340.0 *5*		6442.1				
		2968.0 *5*		4814.5	(17/2)			
7992.7		1473.9 *5*		6518.8				
8087.1		2330.6 *5*		5756.6				
8409.6		627.2 *5*		7782.4				
		897.4 *5*		7512.2				
		1550.1 *5*		6859.3				
8632.9		546.0 *5*		8087.1				
		2113.5 *5*		6518.8				
		2876.6 *5*		5756.6				
8874.3		1897.7 *5*		6976.5				
9280.0		647.5 *5*		8632.9				
		870.1 *5*		8409.6				
		2761.0 *5*		6518.8				
9317.5		684.2 *5*		8632.9				
		2799.0 *5*		6518.8				
10077.1		797.1 *5*		9280.0				
10294.4		976.9 *5*		9317.5				
11070.1		993.0 *5*		10077.1				
11291.5		997.1 *5*		10294.4				

[†] From β^+ decay, (p,γ), and (α,p).
[‡] Relative photon branching from each level.
[#] From (α,p), (p,γ), and (^{12}C,p2nγ), unless indicated otherwise.
[@] Extracted from the evaluation by 1978Kr19.
[&] From RUL and ΔJ^π.
[a] From RUL.
[b] From $\gamma(\theta)$ and RUL.

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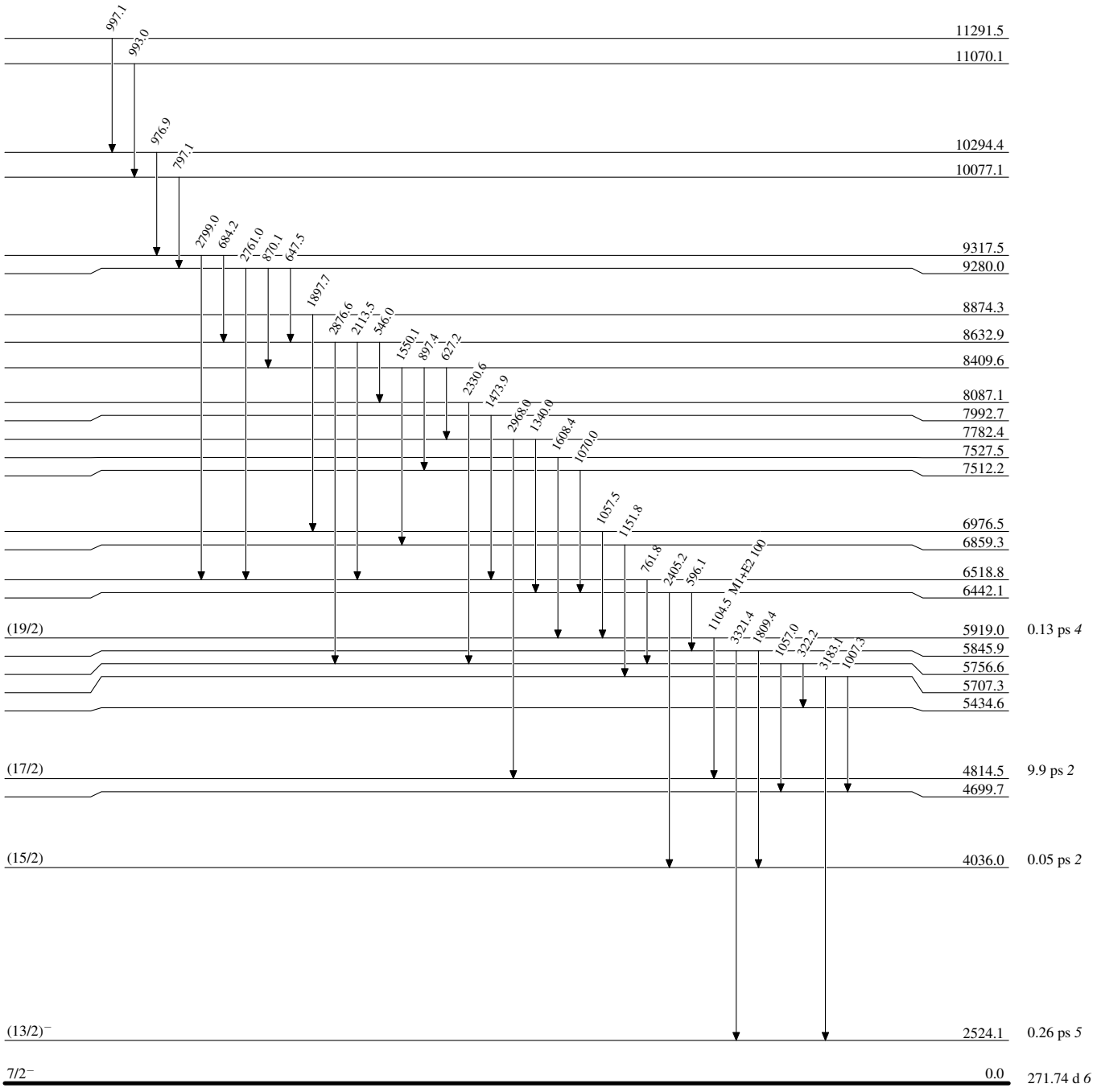
$\gamma(^{57}Co)$ (continued)

[c] From $\gamma(\theta)$ and ΔJ^{π}.
[d] 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.
[e] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



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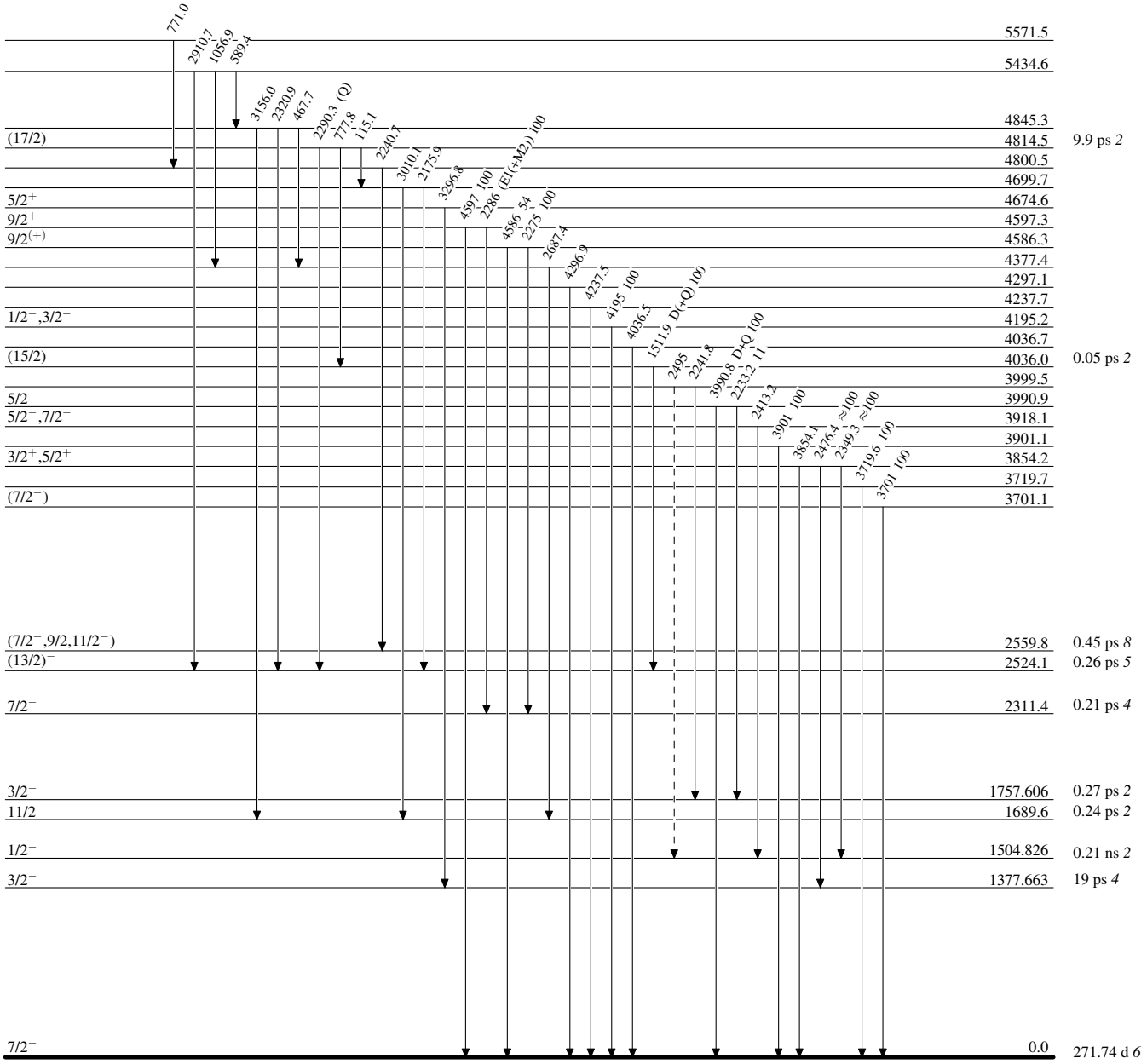
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



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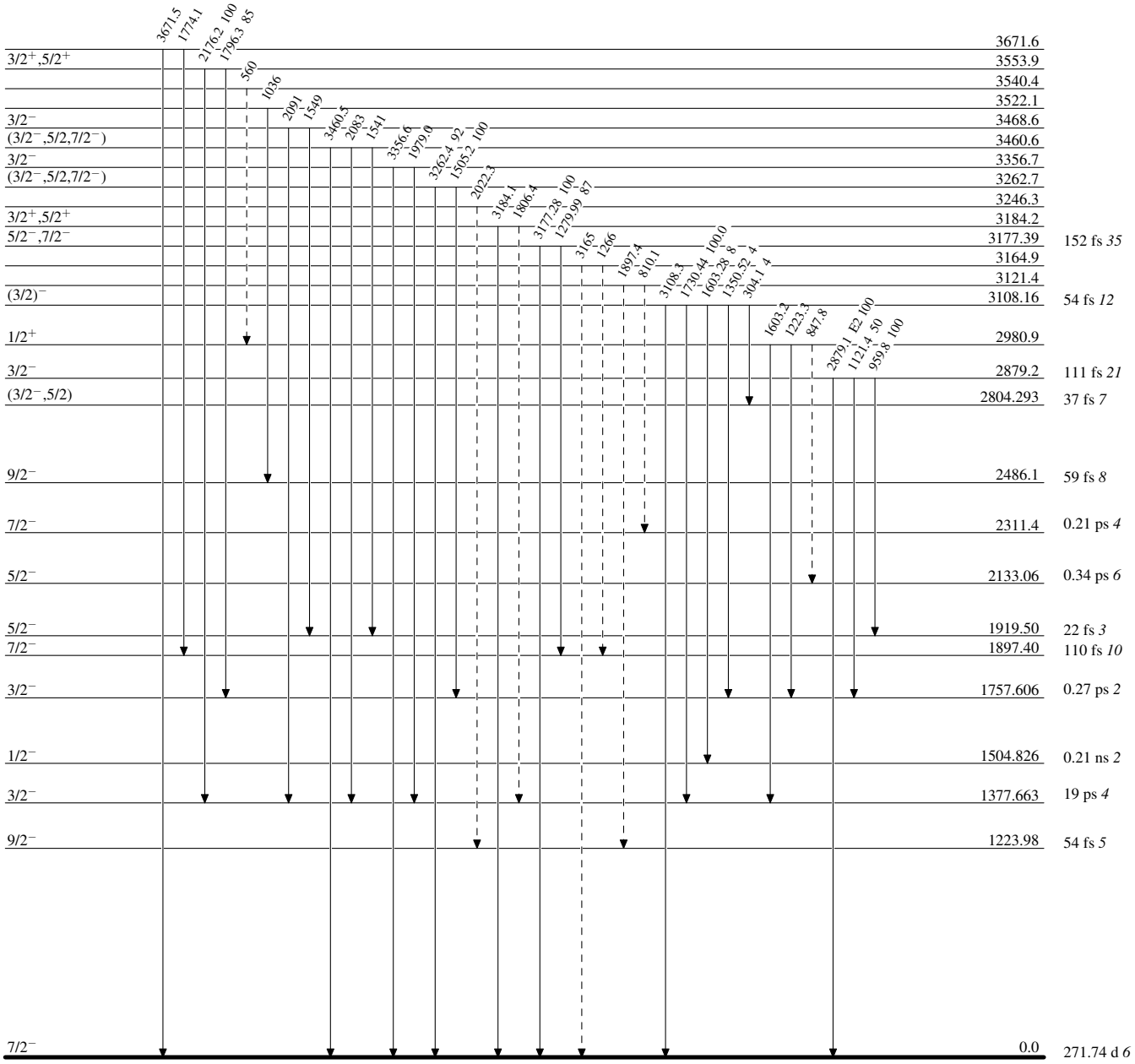
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



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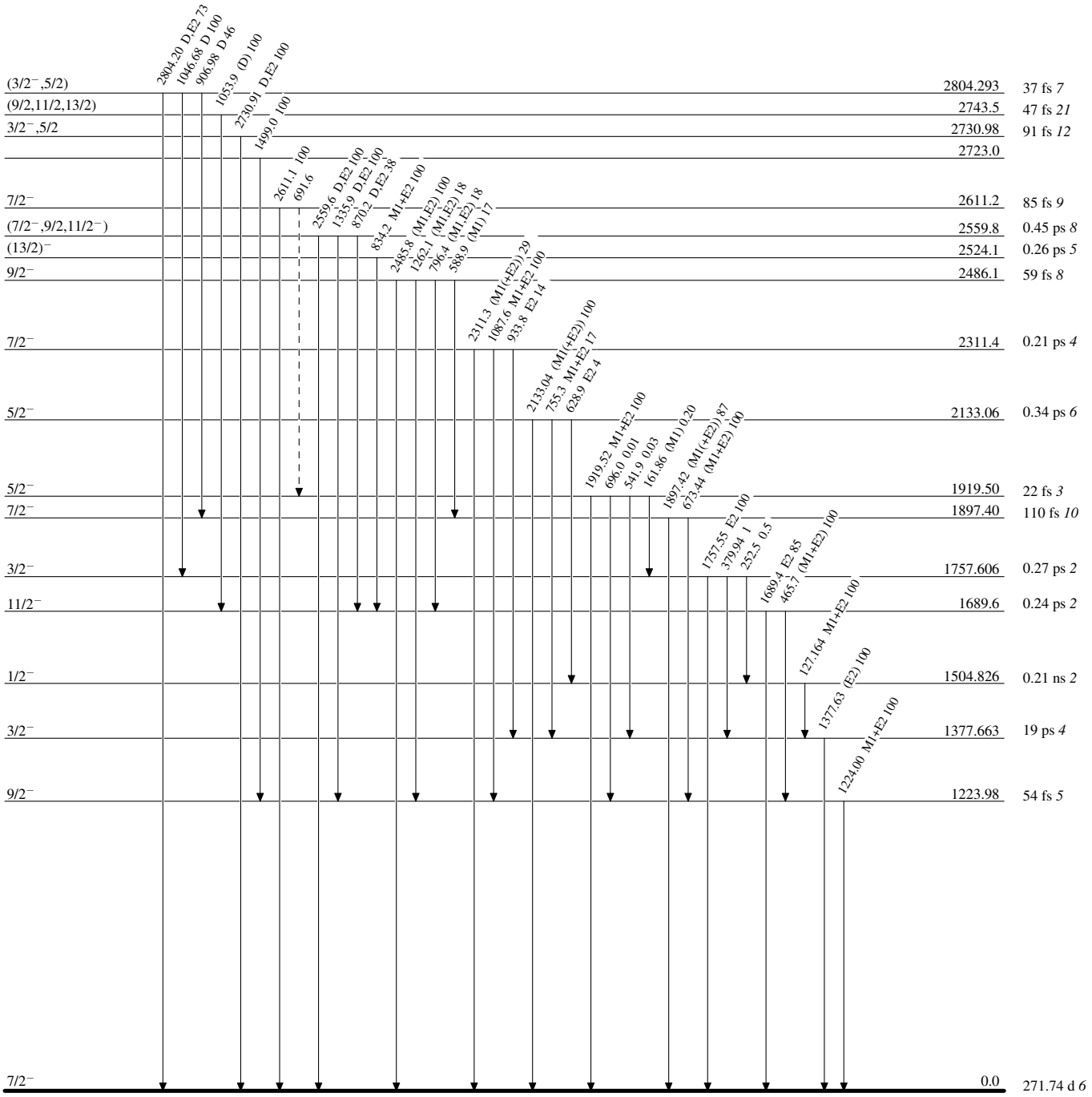
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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