Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 121, 1 (2014)	20-Jun-2014

Q(β^-)=−8.79×10^3 *5*; S(n)=13422.0 *17*; S(p)=4351.6 *16*; Q(α)=−7807.0 *8* 2012Wa38
Additional information 1.

^{54}Co Levels

Band information for ^{54}Co, see ^{28}Si(^{32}S,αpnγ) and ^{28}Si(^{36}Ar,2αpnγ).

Cross Reference (XREF) Flags

A	^{54}Ni ε decay	E	^{28}Si(^{32}S,αpnγ)	I	^{54}Fe(^{3}He,t)
B	^{55}Cu εp decay:27 ms	F	^{28}Si(^{36}Ar,2αpnγ)	J	^{54}Fe(^{6}Li,^{6}He)
C	^{9}Be(^{55}Ni,Xγ)	G	^{54}Fe(p,n)	K	^{54}Fe(^{12}C,^{12}B)
D	^{28}Si(^{28}Si,pnγ)	H	^{54}Fe(p,nγ)		

E(level)†	J$^\pi$#	T$_{1/2}$	XREF	Comments
0.0[b]	0$^+$@	193.28 ms *7*	ABCDEFGHIJ	%ε+%β^+=100 T=1 (2000Sc06) T$_{1/2}$: from 1997Ko65. Others: 193.7 ms *10* (1964Fr01), 193.4 ms *4* (1974Ha59), 193.0 ms *3* (1974Ho21), 193.28 ms *18* (1977Al11), 172 ms *23* (2002Lo13). J$^\pi$: from log ft=3.485 to 0$^+$ ^{54}Fe g.s., T=0 isobaric analog of 0$^+$ g.s. of ^{54}Fe.
197.1[c] *4*	7$^+$@	1.48 min *2*	DEFGHIJ	%ε+%β^+=100 T=0 (2000Sc06) T$_{1/2}$: from 1962Su10, 1967We01. Other: 1.49 min *13* (1974FiZI).
936.90[b] *15*	1$^+$@&		A C EFGHIJK	T=0 (2000Sc06) E(level): identified as spin-isospin transition for L=0 transfer. J$^\pi$: L=0 G-T transition from $\gamma(\theta)$ in (p,nγ).
1445.66[b] *15*	2$^+$@		CDEFGHI	T=1 (2000Sc06) E(level): isobaric analog of the first 1408 level of ^{54}Fe from (^{3}He,t). J$^\pi$: from angular distribution for T=1 in (^{3}He,t), natural parity.
1614.09 *17*	1$^+$		E GHI K	T=0 (2000Sc06) XREF: G(1590)K(1610). J$^\pi$: from M1 γ to 0$^+$.
1821.51[b] *21*	3$^+$@		EFGHI	T=0 (2000Sc06,2004Vo04) XREF: G(1800). J$^\pi$: from E2 γ to 1$^+$.
1887.0 *3*	5$^+$		DEFGHI	T=0 (2000Sc06,2004Vo04) XREF: G(1870). J$^\pi$: E2 γ to 7$^+$, L(^{3}He,t)=6.
2010	1$^+$&		G	
2082.8 *3*	(5$^+$)		E GHI	XREF: G(2070)I(2070). J$^\pi$: from angular distribution for T=0 and unnatural parity in (^{3}He,t).
2086	(5$^+$)		I	J$^\pi$: From $\sigma(\theta)$ In (^{3}He,t).
2149.3 *5*	5$^+$@		GHIJ	T=0 (2000Sc06) XREF: G(2140)J(2154). J$^\pi$: from $\sigma(\theta)$ and comparison with corresponding states in ^{48}Sc (see 1980Ga20).
2173.66 *18*	3$^+$		E H	T=0 (2000Sc06)

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Adopted Levels, Gammas (continued)

^{54}Co Levels (continued)

E(level)[†]	J$^{\pi}$[#]	XREF	Comments
			J$^{\pi}$: 559.6γ (E2) and 1236.7γ (E2) to 1$^+$.
2277.6 *6*	(3$^+$)	D K	J$^{\pi}$: from identically shaped angular distribution and the same cross sections as the state at 1822 keV (see 1978Zi03).
2289.27 *25*	(3)	E GHIJ	T=0 (2000Sc06) XREF: G(2285). J$^{\pi}$: 843.6γ (D+(Q)) to 2$^+$, L(^{3}He,t)≥1.
2350[‡]	1$^+$[&]	G	
2390[‡]		G	
2424.6 *3*	1$^+$[a]	A I	
2651.98[b] *24*	4$^+$	EFGHI K	T=1 (2004Vo04) XREF: G(2645)I(2645)K(2645). J$^{\pi}$: From L(^{3}He,t)=4, M1(+E2) γ to 3$^+$, other M1(+E2) γ to 5$^+$.
2657.2 *9*		H	
2758		I	
2839 *4*		I	
2851.3 *3*	4$^+$	E H	T=0 (2004Vo04) J$^{\pi}$: From M1+E2 1029.8γ to 3$^+$ and 964.3γ to 5$^+$.
2911.6 *4*	(6$^+$)	F I	XREF: I(2900). J$^{\pi}$: from experimental angular distribution pattern which is identical with those of 6$^+$ spin known in (^{3}He,t) (see 1969Br04).
2915.8 *11*		E H	
2919.2 *11*	(3)	H J	J$^{\pi}$: 1473.5γ to 2$^+$.
2979 *5*		E	
3045		I	
3085 *4*		I	
3094.7 *8*		H	
3109.2 *8*		H	
3128 *4*		I	
3142.6 *7*		H	
3155.6 *6*		HIJ	
3166.5 *11*		H	
3170.5[c] *18*	(9$^+$)	EF	J$^{\pi}$: From 2974γ (Q) to 7$^+$, yrast sequence.
3266.2 *10*		E HI	XREF: I(3200).
3306.8 *11*		HI	XREF: I(3290).
3326.0 *11*		E H	
3346.0 *11*		H	
3363.5[c] *18*	8$^+$	E	J$^{\pi}$: From 3165γ (D+Q) to 7$^+$, yrast sequence.
3376.1 *10*	1$^+$[a]	A I	
3399.3 *9*		GH	XREF: G(3390).
3504.0 *11*		HIJ	XREF: J(3512).
3680 *20*		I	
3794 *5*		E	
3889.6 *2*	1$^+$[a]	A G I	XREF: G(3900).
4000		I	
4078.3 *11*		HI	XREF: I(4093).
4130[‡]	1$^+$[&]	G	
4293.4 *10*	1$^+$[a]	A I	XREF: I(4298).
4323.0 *7*	1$^+$[a]	A	
4420		I	
4543.8 *4*	1$^+$[a]	A G I	XREF: G(4530).
4727.6[c] *20*	(11$^+$)	EF I	J$^{\pi}$: From 1557γ (Q) to 9$^+$, yrast sequence.
4822.8 *7*	1$^+$[a]	A G I	XREF: G(4800).
5046.5[b] *19*	10$^+$	EF I	XREF: I(5000). J$^{\pi}$: From 1876γ (D+Q) to 9$^+$, yrast sequence.
5115		I	

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Adopted Levels, Gammas (continued)

^{54}Co Levels (continued)

E(level)[†]	J$^\pi$[#]	XREF	Comments
5189		I	
5202.4 *5*	1$^+$[a]	A G I	XREF: G(5200)I(5221).
5294	1$^+$	G I	XREF: G(5320). J$^\pi$: from the energy dependence of cross sections and angular distribution (see 1981Or02).
5358.4 *20*	10$^+$	E	J$^\pi$: From 2188γ (D+Q) to 8$^+$.
5470	1$^+$&	G I	XREF: G(5400).
5762		I	
5857		I	
5917	1$^+$&	G I	XREF: G(5920).
6092		I	
6127	1$^+$&	G I	XREF: G(6150).
6250		I	
6372		I	
6476	1$^+$&	G I	XREF: G(6480).
6541		I	
6805	1$^+$&	G I	XREF: G(6820).
6897 *4*	(11$^+$)	E	J$^\pi$: From 3726γ (Q) to 9$^+$.
7149	1$^+$&	G I	XREF: G(7120).
7241.5[c] *23*	(12$^+$)	EF	J$^\pi$: From 2514γ (D+Q) to 11$^+$, yrast sequence.
7250 *20*		I	
7404		I	
7454 *3*	8$^+$ to 10$^+$	E	J$^\pi$: From 2407γ to 10$^+$, 4091γ to 8$^+$.
7466	1$^+$&	G I	XREF: G(7460).
7486		I	
7560		I	
7660		I	
7730	1$^+$&	G I	
7877		I	
7963	1$^+$&	G I	XREF: G(7990). E(level): identified as spin-isospin transition for L=0 transfer.
8038		I	
8089		I	
8170		I	
8290[‡]	1$^+$&	G	
8332 *3*	(12$^+$)	E	J$^\pi$: From 2973γ and 3285γ to 10$^+$, 3606γ (D) to 11$^+$.
8341		I	T=1 (2013Ad03)
8417		I	T=0 (2013Ad03)
8418[c] *3*	13$^+$	E	J$^\pi$: From 36904γ (Q) to 11$^+$, yrast sequence.
8713		I	T=0 (2013Ad03)
8790	1$^+$	G	
8823[‡] *4*	&	E	
8827		I	T=1 (2013Ad03)
8877		I	T=0 (2013Ad03)
8962		I	T=(0) (2013Ad03)
8991		I	T=1 (2013Ad03)
9014	1$^+$&	G I	T=(0) (2013Ad03) XREF: G(9030).
9074		I	T=1 (2013Ad03)
9105		I	T=1 (2013Ad03)
9154		I	T=1 (2013Ad03)
9236		I	T=0 (2013Ad03)
9271		I	T=0 (2013Ad03)

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Adopted Levels, Gammas (continued)

^{54}Co Levels (continued)

E(level)[†]	J$^{\pi}$[#]	XREF	Comments
9367	1$^+$[&]	G I	T=1 (2013Ad03) XREF: G(9340).
9440		I	
9509		I	T=1 (2013Ad03)
9680[‡]	1$^+$[&]	G	
9689[d] 5	(13$^+$)	E	J$^{\pi}$: From 4961γ (Q) to 12$^+$, yrare sequence.
9750		I	T=0 (2013Ad03)
9810		I	
9865		I	T=0 (2013Ad03)
9930		I	T=1 (2013Ad03)
9982		I	T=0 (2013Ad03)
9994[d] 5	(13$^+$)	E	J$^{\pi}$: From 5266γ (Q) to 12$^+$, yrare sequence.
10067	1$^+$	G I	T=(1) (2013Ad03) XREF: G(10060).
10093		I	T=(1) (2013Ad03)
10146		I	T=(0) (2013Ad03)
10180		I	T=(2) (2013Ad03)
10209	1$^+$[&]	G I	T=(2) (2013Ad03) XREF: G(10230).
10252[d] 6		E	J$^{\pi}$: 13$^+$ predicted in shell-model calculations.
10305		I	T=(2) (2013Ad03)
10384		I	T=0 (2013Ad03)
10465		I	T=(2) (2013Ad03)
10486[c] 3	(14$^+$)	E	J$^{\pi}$: From 3245γ (Q) to 12$^+$, 2068γ (D+Q) to 13$^+$, yrast sequence.
10507[d] 8		E G	XREF: G(10500). J$^{\pi}$: 13$^+$ predicted in shell-model calculations.
10562		I	T=2 (2013Ad03)
10644		I	T=(2) (2013Ad03)
10719		I	T=(0) (2013Ad03)
10971		I	T=2 (2013Ad03)
11050[‡]		G	
11108		I	T=(1) (2013Ad03)
11229		I	T=(2) (2013Ad03)
11280		I	T=(1) (2013Ad03)
11393		G I	T=(0) (2013Ad03) XREF: G(11400).
11433		I	T=(1) (2013Ad03)
11498		I	T=(0) (2013Ad03)
11573		I	T=2 (2013Ad03)
11660		I	
11759		G I	T=2 (2013Ad03) XREF: G(11750).
11896		I	T=2 (2013Ad03)
12210[‡]		G	
13440[‡]		G	

[†] From least-squares fits to Eγ's. Others from (^{3}He,t), except as noted.
[‡] From (p,n).
[#] From comparison of experimental with calculated angular distribution for assumed various coupled-reaction channels or with angular distribution for known J$^{\pi}$, except as noted.
[@] Configuration=((${\pi}$ f$_{7/2}$)$^{-1}$(${\nu}$ f$_{7/2}$)$^{-1}$) In ^{54}Fe(^{3}He,t) (1973Ru03).

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Adopted Levels, Gammas (continued)

^{54}Co Levels (continued)

[&] L=0, G-T transitions identified by 1990An06 in (p,n).
[a] G-T transitions identified by 2012MoZW in ^{54}Ni ε decay.
[b] Band(A): GS band.
[c] Band(B): Yrast sequence.
[d] Band(C): Yrare sequence. Yrare sequence is found to feed the 11^+ state at 4728 keV of the yrast sequence.

$\gamma(^{54}Co)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	δ[†]	Comments
936.90	1^+	936.8 *2*	100	0.0	0^+	M1		
1445.66	2^+	508.7 *2*	100 *2*	936.90	1^+	M1(+E2)	+0.02 *3*	
		1445.7 *2*	10.4 *3*	0.0	0^+	E2		
1614.09	1^+	1614.1 *2*	100	0.0	0^+	M1		
1821.51	3^+	375.8 *2*	100 *3*	1445.66	2^+	M1(+E2)	−0.01 *5*	E_γ: from unweighted average of 376.0 (p,nγ) and 375.5 (^{36}Ar,2αpnγ).
		884.6 *4*	2.2 *3*	936.90	1^+	E2		
1887.0	5^+	1689.9 *2*	100	197.1	7^+	E2		
2082.8	(5^+)	195.8 *2*	42 *4*	1887.0	5^+			
		261.3 *2*	100 *3*	1821.51	3^+			
2149.3	5^+	1952.2 *3*	100	197.1	7^+			
2173.66	3^+	559.6 *2*	97 *10*	1614.09	1^+	E2		
		728.0 *3*	100 *10*	1445.66	2^+	M1(+E2)	+0.01 *5*	
		1236.7 *2*	55 *9*	936.90	1^+	E2		
2277.6	(3^+)	831.9 *5*	100	1445.66	2^+			E_γ: From (^{28}Si,pnγ).
2289.27	(3)	843.6 *2*	100	1445.66	2^+	D(+Q)	−0.03 *4*	
2424.6	1^+	2424.6[@]	100[@]	0.0	0^+			
2651.98	4^+	765.0 *2*	57 *2*	1887.0	5^+	M1(+E2)	+0.04 *6*	
		830.4 *2*	100 *3*	1821.51	3^+	M1(+E2)	+0.00 *3*	δ: other: −0.02 *3* In (p,nγ).
		1206.4 *3*	<2	1445.66	2^+	E2		
2657.2		1043.1[&]		1614.09	1^+			
		1211.6		1445.66	2^+			
2851.3	4^+	964.3 *2*	51 *3*	1887.0	5^+			
		1029.8 *2*	100 *3*	1821.51	3^+	M1+E2	+0.12 *4*	δ: other: +0.10 *4* In (p,nγ).
2911.6	(6^+)	259.6[‡] *3*	100[‡] *12*	2651.98	4^+			
		1025[‡] *2*	25[‡] *12*	1887.0	5^+			
2915.8		833[#] *1*	100[#]	2082.8	(5^+)			
2919.2	(3)	1473.5	100	1445.66	2^+			
2979		2782[#] *5*	100[#]	197.1	7^+			
3094.7		1649.0		1445.66	2^+			
		2157.7		936.90	1^+			
3109.2		1663.5		1445.66	2^+			
		2172.2		936.90	1^+			
3142.6		490.4		2651.98	4^+			
		1255.6		1887.0	5^+			
		1321.2		1821.51	3^+			
3155.6		866.1		2289.27	(3)			
		1072.9		2082.8	(5^+)			
		1709.9		1445.66	2^+			
3166.5		1720.8	100	1445.66	2^+			
3170.5	(9^+)	2974[#] *2*	100[#]	197.1	7^+	Q[#]		Additional information 2.
3266.2		977[#] *1*	100[#] *22*	2289.27	(3)			
		1183[#] *2*	56[#] *22*	2082.8	(5^+)			
3306.8		1224.0	100	2082.8	(5^+)			

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Adopted Levels, Gammas (continued)

γ(^{54}Co) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	Comments
3326.0		674[#] *1*	100[#]	2651.98	4^+		
3346.0		1172.3		2173.66	3^+		
3363.5	8^+	193[#] *1*	12[#] *12*	3170.5	(9^+)		
		3165[#] *3*	100[#] *12*	197.1	7^+	D+Q[#]	
3376.1	1^+	3376.1[@] *2*	100[@]	0.0	0^+		
3399.3		742.1		2657.2			
		1225.6		2173.66	3^+		
3504.0		2058.3	100	1445.66	2^+		
3794		3597[#] *5*	100[#]	197.1	7^+		
3889.6	1^+	3889.6[@] *2*	100[@]	0.0	0^+		
4078.3		1426.3		2651.98	4^+		
4293.4	1^+	4293.4[@] *10*	100[@]	0.0	0^+		
4323.0	1^+	4323.0[@] *7*	100[@]	0.0	0^+		
4543.8	1^+	4543.8[@] *4*	100[@]	0.0	0^+		
4727.6	(11^+)	1557[#] *1*	100[#]	3170.5	(9^+)	Q[#]	Additional information 3.
4822.8	1^+	4822.8[@] *7*	100[@]	0.0	0^+		
5046.5	10^+	1683[#] *1*	43[#] *14*	3363.5	8^+		
		1876[#] *1*	100[#] *9*	3170.5	(9^+)	D+Q[#]	
5202.4	1^+	5202.4[@] *5*	100[@]	0.0	0^+		
5358.4	10^+	1994[#] *2*	21[#] *11*	3363.5	8^+		
		2188[#] *1*	100[#] *8*	3170.5	(9^+)	D+Q[#]	
6897	(11^+)	3726[#] *3*	100[#]	3170.5	(9^+)	(Q)[#]	
7241.5	(12^+)	2195[#] *2*	12[#] *7*	5046.5	10^+		
		2514[#] *2*	100[#] *14*	4727.6	(11^+)	(D+Q)[#]	
7454	8^+ to 10^+	2407[#&] *2*	100[#] *50*	5046.5	10^+		
		4091[#] *4*	100[#] *50*	3363.5	8^+		
8332	(12^+)	2973[#&] *3*	100[#] *67*	5358.4	10^+		
		3285[#] *3*	100[#] *33*	5046.5	10^+		
		3604[#] *4*	83[#] *13*	4727.6	(11^+)	(D)[#]	
8418	13^+	3690[#] *3*	100[#]	4727.6	(11^+)	Q[#]	
8823		3465[#] *3*	100[#]	5358.4	10^+		
9689	(13^+)	2446[#&] *2*	68[#] *26*	7241.5	(12^+)		
		4961[#] *4*	100[#] *21*	4727.6	(11^+)	(Q)[#]	
9994	(13^+)	5266[#] *4*	100[#]	4727.6	(11^+)	(Q)[#]	
10252		5524[#] *5*	100[#]	4727.6	(11^+)		
10486	(14^+)	2068[#] *1*	71[#] *13*	8418	13^+	(D+Q)[#]	
		3245[#] *3*	100[#] *21*	7241.5	(12^+)	(Q)[#]	
10507		5779[#] *7*	100[#]	4727.6	(11^+)		

[†] From (p,nγ), except As noted.
[‡] From ^{28}Si(^{36}Ar,2αpnγ).
[#] From ^{28}Si(^{32}S,αpnγ).
[@] ^{54}Ni ε decay.
[&] Placement of transition in the level scheme is uncertain.

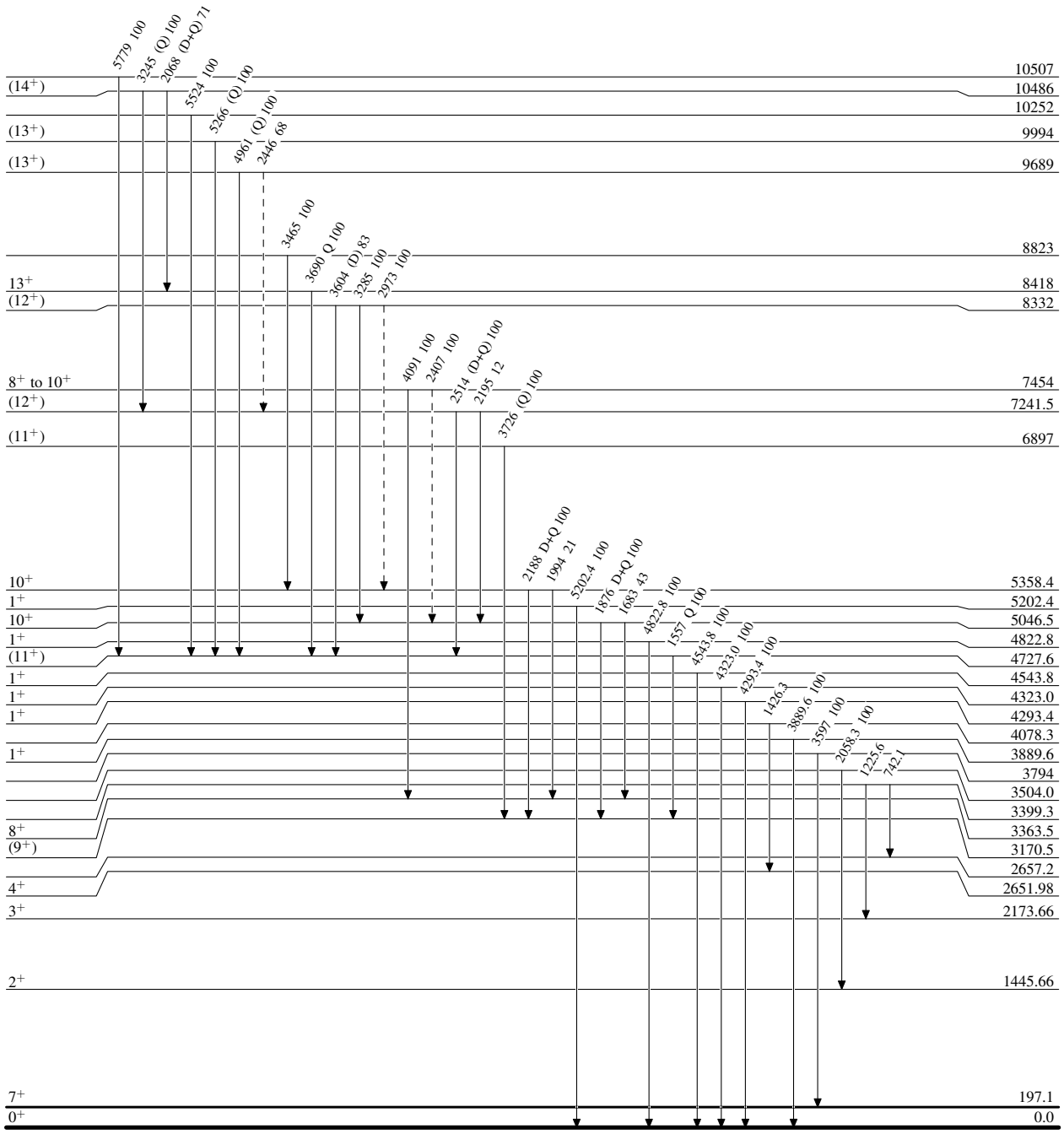
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{54}_{27}Co_{27}$

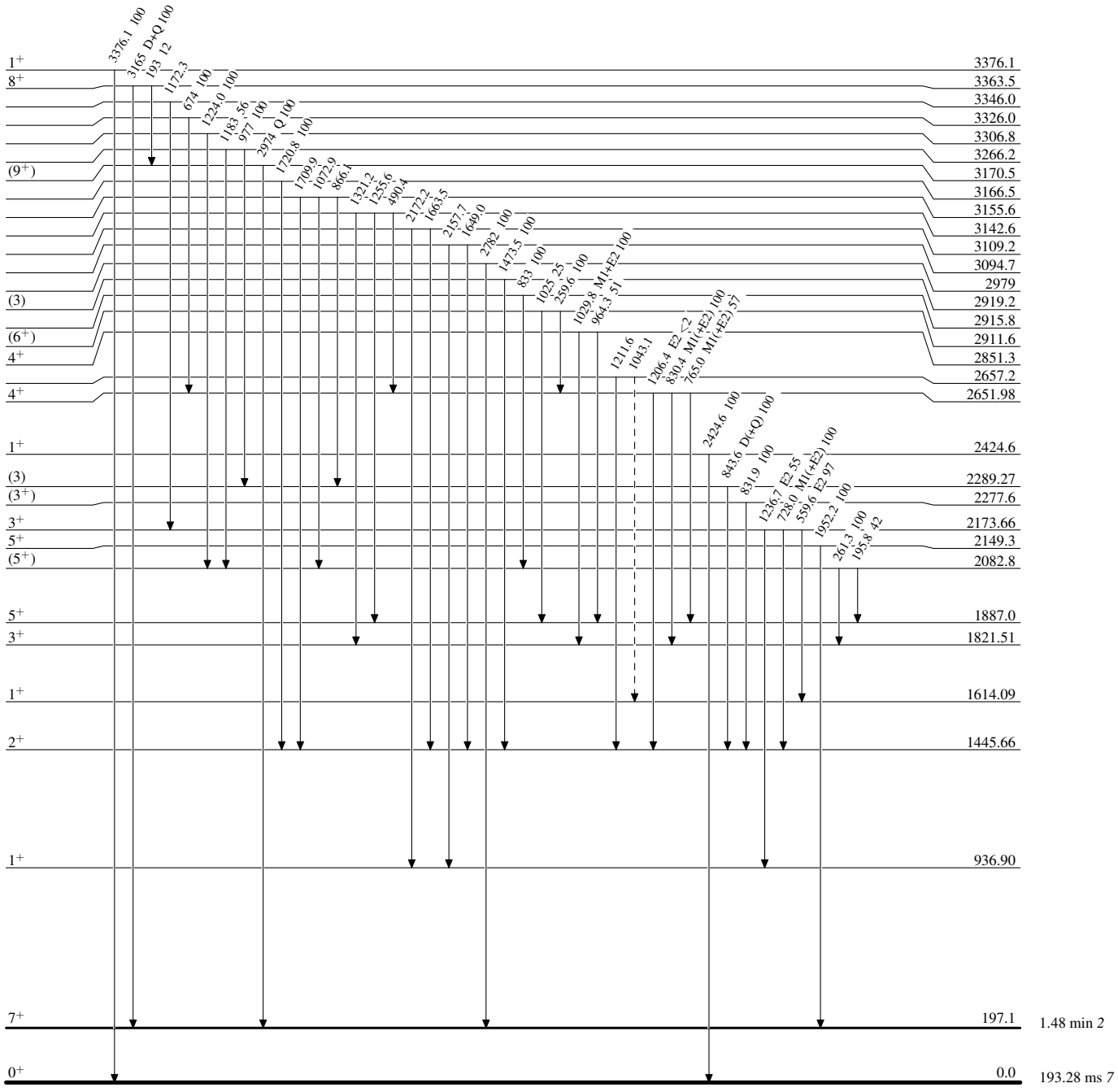
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

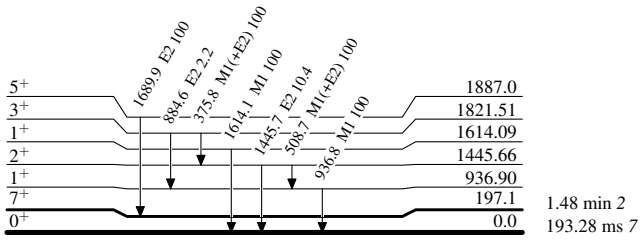


$^{54}_{27}Co_{27}$

Adopted Levels, Gammas

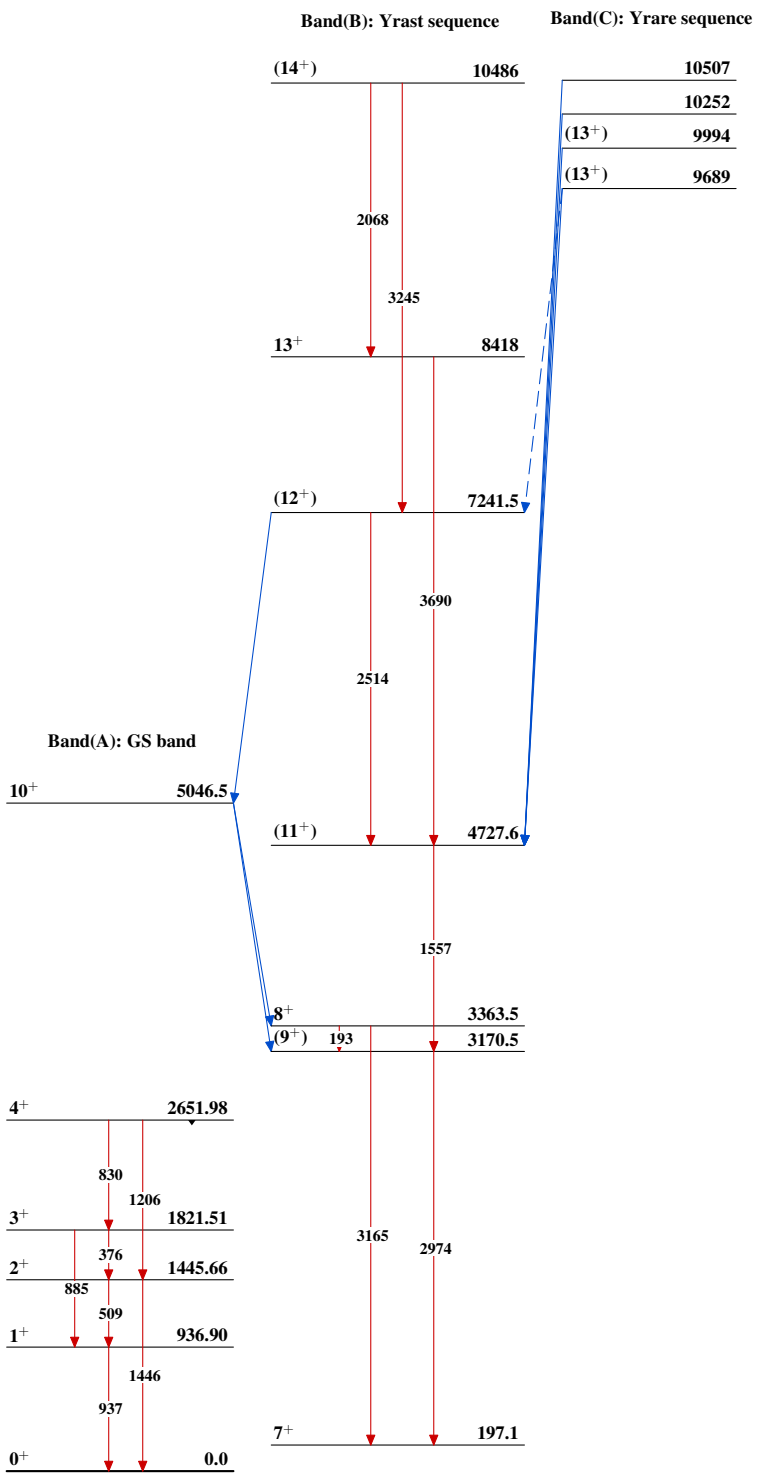
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{54}_{27}Co_{27}$

Adopted Levels, Gammas



$^{54}_{27}Co_{27}$