Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 174, 1 (2021)	15-Apr-2021

Q(β^-)=−2694 *10*; S(n)=9935 *6*; S(p)=4918 *3*; Q(α)=−892 *8* 2021Wa16
S(2n)=17840 *6*, S(2p)=12921 *4* (2021Wa16).
Mass measurements: 1978Sz04.

^{123}I Levels

Band assignments and configurations are adopted from (^{14}N,α3nγ) (2006Wa05) and ^{48}Ca,p4nγ) (2012Si04, 2012Si21), unless otherwise noted.

Cross Reference (XREF) Flags

A	^{123}Xe ε decay	F	^{121}Sb(α,2nγ)
B	^{80}Se(^{48}Ca,p4nγ)	G	^{122}Sn(^{7}Li,6nγ)
C	^{110}Pd(^{18}O,p4nγ)	H	^{122}Te(p,p′) IAR
D	^{116}Cd(^{14}N,α3nγ)	I	^{122}Te(^{3}He,d)
E	^{120}Sn(^{6}Li,3nγ)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[f]	5/2$^+$	13.2230 h *19*	ABCDEFG I	%ε+%β^+=100 μ=2.818 *7* (1979Sc13) Configuration=(π 2d$_{5/2}$) J$^\pi$: spin=5/2 from atomic beam (1958Ga18); L(^{3}He,d)=2 from 0$^+$. T$_{1/2}$: Weighted average of 13.25 h *3* (2018Bo02), 13.218 h *7* (2012Re25), 13.232 h *7* (2004Sc04), 13.2216 h *24* (2004Da05), 13.2235 h *19* (2002Un02, 1992Un01), 13.21 h *3* (1987Ja13), 13.21 h *2* (1982La25), 13.4 h *5* (1968Jo02), 13.30 h *5* (1965An05). Others: 13.50 h *11* (1973Ka45) and 13.02 h *4* (1968Hu01) are discrepant. μ: from nuclear magnetic resonance on oriented nuclei (1979Sc13). Also in 2014StZZ compilation. 1992Oh03 measured magnetic hyperfine splitting frequency by NMR-ON method.
138.33[d] *5*	7/2$^+$		ABCDEFG i	Configuration=(π 1g$_{7/2}$) XREF: i(144). J$^\pi$: 138.4γ M1+E2, ΔJ=1 to 5/2$^+$, 532.6γ from 9/2$^+$; L(^{3}He,d)=0+4 from 0$^+$ for a composite peak at 144 keV.
148.94 *10*	1/2$^+$	2.35 ns *3*	A F i	Configuration=(π 3s$_{1/2}$) XREF: i(144). J$^\pi$: 148.99γ E2, ΔJ=2 to 5/2$^+$, 899.6γ M1 from 1/2$^+$; L(^{3}He,d)=0+4 from 0$^+$ for a composite peak at 144 keV gives 1/2$^+$ for one component and 7/2$^+$ for the other. T$_{1/2}$: from $\gamma\gamma$(t) and γ-ce(t) in ^{123}Xe ε decay.
178.04 *10*	3/2$^+$	0.36 ns *2*	A F I	J$^\pi$: L(^{3}He,d)=2 from 0$^+$; 178.1γ M1(+E2) to 5/2$^+$, 870.7γ M1(+E2) from 1/2$^+$. T$_{1/2}$: from γ-ce(t) in ^{123}Xe ε decay. Other: 0.3 ns *1* from generalized centroid-shift method (1988Ko16) in (α,2nγ).
302.2? *3*		0.8 ns *1*	F	T$_{1/2}$: from generalized centroid-shift in (α,2nγ).
330.30 *9*	3/2$^+$	42 ps *13*	A F I	J$^\pi$: 912.0γ M1 from 1/2$^+$; 192.3γ to 7/2$^+$ must be D or E2, required by RUL. T$_{1/2}$: from γ-ce(t) in ^{123}Xe ε decay.
474.20[g] *9*	7/2$^+$		B DEF	J$^\pi$: 474.2γ M1+E2, ΔJ=1 to 5/2$^+$, 167.1γ and 196.7γ from 9/2$^+$.
552.30[e] *6*	9/2$^+$		B DEF	J$^\pi$: 413.97γ M1+E2, ΔJ=1 to 7/2$^+$, 552.3γ E2, ΔJ=2 to 5/2$^+$.

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Adopted Levels, Gammas (continued)

^{123}I Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
641.27[c] *7*	9/2$^+$	0.2 ns *1*	DEFG	Jπ: 641.3γ E2, ΔJ=2 to 5/2$^+$, 502.9γ M1+E2, ΔJ=1 to 7/2$^+$. $T_{1/2}$: from generalized centroid-shift in (α,2nγ).
671.00[f] *6*	9/2$^+$		BCDEF	Jπ: 671.0γ E2, ΔJ=2 to 5/2$^+$, 118.7γ to 9/2$^+$; band assignment.
794.08[d] *10*	11/2$^+$		B DEF	Jπ: 655.8γ E2, ΔJ=2 to 7/2$^+$, 241.7γ D, ΔJ=1 to 9/2$^+$.
943.46[h] *7*	11/2$^-$	0.2 ns *1*	BCDEF I	Configuration=(π 1h$_{11/2}$) Jπ: L(^{3}He,d)=5 from 0$^+$; 272.5γ E1, ΔJ=1 to 9/2$^+$. $T_{1/2}$: from generalized centroid-shift in (α,2nγ).
972.42[b] *9*	11/2$^+$		DEFG	Jπ: 331.2γ M1+E2, ΔJ=1 to 9/2$^+$; no γ decays to 5/2$^+$, 7/2$^+$ and 3/2$^+$ low-lying levels; band assignment.
1011.07 *14*	(3/2)$^+$		A I	Jπ: L(^{3}He,d)=2 from 0$^+$; ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ in ^{123}Xe.
1048.71 *13*	1/2$^+$		A I	Jπ: L(^{3}He,d)=0 from 0$^+$.
1080.22[g] *18*	11/2$^{(+)}$		B DEF	Jπ: 606.0γ Q, ΔJ=2 to 7/2$^+$, 528.0γ and 409.1γ to 9/2$^+$; band assignment.
1113.12 *13*	(1/2,3/2)$^+$		A	Jπ: 964.0γ M1,E2 to 1/2$^+$; ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ parent in ^{123}Xe.
1153.4? *3*	(3/2)$^+$		A i	XREF: A(?)i(1152). Jπ: L(^{3}He,d)=2 from 0$^+$ for a level at 1152; probable ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ parent in ^{123}Xe.
1156.11[e] *14*	13/2$^+$		B DEF i	XREF: i(1152). Jπ: 362.1γ M1+E2, ΔJ=1 to 11/2$^+$, 603.9γ Q, ΔJ=2 to 9/2$^+$; band assignment.
1189.9? *3*	(1/2$^+$,3/2,5/2$^+$)		A	Jπ: possible 1041.0γ to 1/2$^+$, possible 1189.9γ to 5/2$^+$.
1242.38 *16*	1/2$^+$		A I	Jπ: L(^{3}He,d)=0 from 0$^+$.
1271 *5*			I	
1310.12 *14*	(3/2)$^+$		A I	XREF: I(1307). Jπ: L(^{3}He,d)=2 from 0$^+$; ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ parent in ^{123}Xe.
1315.52[c] *12*	13/2$^+$		DEFG	Jπ: 674.2γ Q, ΔJ=2 to 9/2$^+$, 343.1γ M1+E2, ΔJ=1 to 11/2$^+$.
1338 *3*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
1368 *3*	3/2$^+$,5/2$^+$		I	Jπ: L(^{3}He,d)=2 from 0$^+$.
1390.82 *14*	(1/2,3/2)$^+$		A I	Jπ: 1060.7γ M1 to 3/2$^+$; ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ parent in ^{123}Xe.
1437.4[f] *3*	13/2$^{(+)}$		D F	Jπ: 766.2γ Q, ΔJ=2 to 9/2$^+$, 357.3γ to 11/2$^{(+)}$; band assignment.
1440 *10*			I	
1453.00[h] *9*	15/2$^-$		BCDEF	Jπ: 509.6γ E2 to 11/2$^-$; band assignment.
1493 *3*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
1576.58[d] *17*	15/2$^{(+)}$		B DEF	Jπ: 782.4γ Q, ΔJ=2 to 11/2$^+$, 420.4γ to 13/2$^+$; band assignment.
1583 *3*	3/2$^+$,5/2$^+$		I	Jπ: L(^{3}He,d)=2 from 0$^+$.
1602.46[a] *22*	(15/2$^+$)		D FG	Jπ: 629.9γ (Q), ΔJ=(2) to 11/2$^+$. (13/2$^+$) proposed in (^{7}Li,6nγ) is inconsistent.
1607.07? *16*	(15/2$^+$)		F	Jπ: 291.6γ (M1+E2) to 13/2$^+$.
1623 *6*			I	
1632.56 *22*	(13/2$^-$)		F	Jπ: 689.1γ, (M1+E2) to 11/2$^-$.
1657.1 *3*	(3/2)$^+$		A I	XREF: A(?). Jπ: L(^{3}He,d)=2 from 0$^+$; probable ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ in ^{123}Xe.
1690.39[b] *16*	15/2$^+$		DEFG	Jπ: 374.9γ M1+E2, ΔJ=1 to 13/2$^+$, 718.0γ Q, ΔJ=2 to 11/2$^+$; band assignment.
1718 *3*	3/2$^+$,5/2$^+$		I	Jπ: L(^{3}He,d)=2 from 0$^+$.
1744 *10*			I	
1791.4[g] *3*	(15/2$^+$)		B DEF	Jπ: 711.1γ E2, ΔJ=2 to 11/2$^{(+)}$; band assignment.
1808 *10*			I	
1816.0? *3*			F	

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Adopted Levels, Gammas (continued)

^{123}I Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$	XREF	Comments
1864.91 *13*	$1/2^+$		A I	Jπ: L(^{3}He,d)=0 from 0^+.
1871.25[e] *16*	$17/2^+$		B DEF	Jπ: 715.2γ E2, ΔJ=2 to $13/2^+$, 294.6γ to $15/2^{(+)}$; band assignment.
1929 *10*	$(^+)$		I	L(^{3}He,d)=(0+2) from 0^+.
1934.16 *15*	$(1/2,3/2,5/2)^+$		A	Jπ: 691.5γ M1,E2 to $1/2^+$, 1934.2γ to $5/2^+$.
1956.10 *15*	$3/2^+$		A I	Jπ: L(^{3}He,d)=2 from 0^+; allowed ε feeding from $1/2^{(+)}$ parent in ^{123}Xe.
1983 *10*	$3/2^+,5/2^+$		I	Jπ: L(^{3}He,d)=2 from 0^+.
2000.6? *3*	$(^+)$	0.4 ns *1*	F	Jπ: 310.2γ (M1,E2) to $15/2^+$. $T_{1/2}$: from generalized centroid-shift in (α,2nγ) (1988Ko16).
2012 *10*			I	
2016.12[a] *19*	$(17/2^+)$		D FG	Jπ: 700.6γ Q, ΔJ=2 to $13/2^+$, 413.6γ D, ΔJ=1 to $(15/2^+)$.
2039.67[h] *14*	$19/2^-$		BCDEF	Jπ: 586.7γ E2, ΔJ=2 to $15/2^-$; band assignment.
2048 *10*	$1/2^+$		I	Jπ: L(^{3}He,d)=0 from 0^+.
2062.52 *12*	$(1/2,3/2,5/2)^+$		A	Jπ: 909.0γ M1 to $(3/2)^+$.
2082.06[c] *21*	$17/2^{(+)}$		DEFG	Jπ: 766.6γ Q, ΔJ=2 to $13/2^+$, 391.7γ D, ΔJ=1 to $15/2^+$; band assignment.
2083 *10*			I	
2110 *10*			I	
2140 *10*	$(^+)$		I	Jπ: L(^{3}He,d)=(0+2) from 0^+.
2152.43 *21*	$(1/2^+,3/2)$		A	Jπ: possible 2151.7γ to $5/2^+$; ε feeding (ΔJ=0,1) from $1/2^{(+)}$ parent in ^{123}Xe.
2201.35 *22*	$(1/2^+,3/2)$		A	Jπ: 2201.2γ to $5/2^+$; probable ε feeding (ΔJ=0,1) from $1/2^{(+)}$ parent in ^{123}Xe.
2215 *10*			I	
2250.06 *18*	$(3/2)^+$		A I	Jπ: L(^{3}He,d)=2 from 0^+; ε feeding (ΔJ=0,1) from $1/2^{(+)}$ parent in ^{123}Xe.
2262.1 *4*			F	
2265.61 *22*	$(17/2^-)$		F	Jπ: 812.6γ D+Q to $15/2^-$; band assignment.
2283.0[f] *6*	$(17/2^+)$		D F	XREF: F(?). Jπ: 845.6γ to $13/2^{(+)}$; band assignment.
2285.55 *21*	$1/2^+$		A I	XREF: I(2276). Jπ: L(^{3}He,d)=0 from 0^+.
2319.6 *11*			F	
2322.7 *3*	$(1/2,3/2)$		A i	XREF: i(2325). Jπ: probable ε feeding (ΔJ=0,1) from $1/2^{(+)}$ parent in ^{123}Xe.
2327.4 *4*	$(1/2^+,3/2)$		A i	XREF: i(2325). Jπ: 2327.3γ to $5/2^+$; probable ε feeding from $1/2^{(+)}$ parent in ^{123}Xe.
2339.1? *4*			F	
2360 *10*			I	
2361.85[a] *21*	$(19/2^+)$		DEFG	Jπ: 671.5γ Q, ΔJ=2 to $15/2^+$, 345.7γ D, ΔJ=1 to $(17/2^+)$.
2367.81 *22*	$(1/2^+,3/2^+)$		A	Jπ: probable allowed ε feeding from $1/2^{(+)}$ parent in ^{123}Xe.
2369.47 *25*			F	
2389.4 *3*	$(3/2)^+$		A I	XREF: I(2385). Jπ: L(^{3}He,d)=2 from 0^+; ε feeding (ΔJ=0,1) from $1/2^{(+)}$ parent in ^{123}Xe.
2421 *10*	$(3/2^+,5/2^+)$		I	Jπ: L(^{3}He,d)=(2) from 0^+.
2439.9 *4*			F	
2455.5 *5*	$(1/2^+)$		A I	XREF: A(?). Jπ: L(^{3}He,d)=(0) from 0^+.
2466.40[d] *21*	$19/2^{(+)}$		B D F	Jπ: 889.7γ Q, ΔJ=2 to $15/2^{(+)}$, 595.4γ to $17/2^+$; band assignment.
2477 *10*	$3/2^+,5/2^+$		I	Jπ: L(^{3}He,d)=2 from 0^+.
2481.6? *4*			F	
2500.9[b] *3*	$19/2^{(+)}$		D FG	Jπ: 810.5γ Q, ΔJ=2 to $15/2^+$, 418.9γ D, ΔJ=1 to $17/2^{(+)}$; band assignment.

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Adopted Levels, Gammas (continued)

^{123}I Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
2515 *10*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
2542 *10*	3/2$^+$,5/2$^+$		I	Jπ: L(^{3}He,d)=2 from 0$^+$.
2560.3? *5*	(1/2$^+$,3/2)		A	Jπ: possible 2560.4γ to 5/2$^+$; probable ε feeding (ΔJ=0,1) from 1/2$^{(+)}$ parent in ^{123}Xe.
2567.3 *3*			F	
2580.0? *5*	(1/2$^+$,3/2,5/2$^+$)		A	Jπ: possible 2430.8γ to 1/2$^+$, possible 2580.3γ to 5/2$^+$.
2613.69[h] *24*	23/2$^-$		BCDEF	Jπ: 574.1γ E2, ΔJ=2 to 19/2$^-$; band assignment.
2648.0[g] *3*	(19/2$^+$)		B D F	Jπ: 856.5γ Q, ΔJ=2 to (15/2$^+$); band assignment.
2659.9[a] *3*	(21/2$^+$)	26.6 ns *20*	DEFG	μ=+10.9 *9* (2014StZZ) Jπ: 298.1γ (M1), ΔJ=1 to (19/2$^+$). Other: (19/2$^-$) proposed by 2011Mo28 in (^{7}Li,6nγ). $T_{1/2}$: weighted average of 24 ns *3* in (^{7}Li,6nγ) (2011Mo28), 28 ns *2* in (α,2nγ) (1977Ha36) and 26.3 ns *21* in (^{6}Li,3nγ) (1982Sh20). Note apparent error in authors' value of $T_{1/2}$=24.3 ns *20* in figure 3 (1982Sh20). μ: from TDPAD, quoted in the 2014StZZ compilation, from a conference proceeding abstract (Proceeding of the 6th Hyperfine Interaction Conference in Groningen, page NP14, 1983).
2672?			G	E(level): this level is proposed by 2011Mo28 in (^{7}Li,6nγ), based on a 399γ-310γ cascade to 2362 level.
2711.92[e] *21*	21/2$^{(+)}$		B DEF	Jπ: 840.7γ Q, ΔJ=2 to 17/2$^+$, 245.4γ D, ΔJ=1 to 19/2$^{(+)}$; band assignment.
2732 *10*			I	
2766 *10*	(1/2$^+$)		I	Jπ: L(^{3}He,d)=(0) from 0$^+$.
2790.3 *4*			F	
2807 *10*	3/2$^+$,5/2$^+$		I	Jπ: L(^{3}He,d)=2 from 0$^+$.
2846 *10*			I	
2876.5[@] *3*	(21/2$^+$)		B D	Jπ: 1005.3γ Q, ΔJ=2 to 17/2$^+$; band assignment.
2880 *10*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
2936.8[c] *4*	21/2$^{(+)}$		D G	Jπ: 854.8γ Q, ΔJ=2 to 17/2$^{(+)}$, 435.8γ D, ΔJ=1 to 19/2$^{(+)}$; band assignment.
2947.7? *4*	(21/2$^-$)		F	Jπ: 908.0γ (D+Q) to 19/2$^-$; band assignment.
2963 *10*	3/2$^+$,5/2$^+$		I	Jπ: L(^{3}He,d)=2 from 0$^+$.
3001 *10*			I	
3032 *10*			I	
3037?			G	
3059 *10*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
3071?			G	E(level): this level is proposed by 2011Mo28 in (^{7}Li,6nγ), based on a 399γ-310γ cascade to 2362 level.
3083.82[d] *23*	23/2$^{(+)}$		B D	Jπ: 617.4γ Q, ΔJ=2 to 19/2$^{(+)}$, 371.9γ D, ΔJ=1 to 21/2$^{(+)}$; band assignment.
3145 *10*			I	
3178 *10*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
3200.3[&] *3*	(23/2$^+$)		B D	Jπ: 323.9γ D, ΔJ=1 to (21/2$^+$), 488.5γ D, ΔJ=1 to 21/2$^{(+)}$; band assignment.
3207 *10*	1/2$^+$		I	Jπ: L(^{3}He,d)=0 from 0$^+$.
3255 *10*			I	
3286 *10*			I	
3309 *10*	(1/2$^+$)		I	Jπ: L(^{3}He,d)=(0) from 0$^+$.
3324.21[e] *24*	(25/2$^+$)		B D	Jπ: 612.3γ Q, ΔJ=2 to 21/2$^{(+)}$, 123.8γ D, ΔJ=1 to (23/2$^+$); band assignment.
3337.3[g] *5*	23/2$^+$		B D	Jπ: 689.3γ to (19/2$^+$); band assignment.
3393.2[b] *5*	23/2$^{(+)}$		D G	Jπ: 892.3γ Q, ΔJ=2 to 19/2$^{(+)}$, 456.3γ D, ΔJ=1 to 21/2$^{(+)}$; band assignment.

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Adopted Levels, Gammas (continued)

^{123}I Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
3409?		F	
3460.9? *15*		G	
3490.8[@] *3*	(25/2$^+$)	B D	J$^{\pi}$: 290.5γ D, ΔJ=1 to (23/2$^+$), 407.0γ D, ΔJ=1 to 23/2$^{(+)}$; band assignment.
3512.0[h] *3*	(27/2$^-$)	BCDEF	J$^{\pi}$: 898.4γ Q, ΔJ=2 to 23/2$^-$; band assignment.
3688		D	
3697?		F	
3716.6[d] *3*	(27/2$^+$)	B D	J$^{\pi}$: 632.7γ Q, ΔJ=2 to 23/2$^{(+)}$, 392.4γ D, ΔJ=1 to (25/2$^+$); band assignment.
3861.9[c] *6*	(25/2$^+$)	D	J$^{\pi}$: 468.6γ D, ΔJ=1 to 23/2$^{(+)}$, 925.3γ to 21/2$^{(+)}$; band assignment.
3904.6[&] *4*	(27/2$^+$)	B D	J$^{\pi}$: 704.3γ Q, ΔJ=2 to (23/2$^+$), 413.8γ D, ΔJ=1 to (25/2$^+$); band assignment.
3916.9? *18*		G	
4054.8[e] *3*	(29/2$^+$)	B D	J$^{\pi}$: 730.6γ Q, ΔJ=2 to (25/2$^+$), 338.2γ D, ΔJ=1 to (27/2$^+$); band assignment.
4250.9[@] *4*	(29/2$^+$)	B D	J$^{\pi}$: 346.3γ D, ΔJ=1 to (27/2$^+$); band assignment.
4326.3[h] *4*	(31/2$^-$)	BCD	J$^{\pi}$: 814.3γ Q, ΔJ=2 to (27/2$^-$); band assignment.
4542.4[d] *3*	(31/2$^+$)	B D	J$^{\pi}$: 825.8γ Q, ΔJ=2 to (27/2$^+$), 487.6γ to (29/2$^+$); band assignment.
4606.2? *16*		D	
4700.6[&] *5*	(31/2$^+$)	B D	J$^{\pi}$: 796.0γ Q, ΔJ=2 to (27/2$^+$); band assignment.
4901.2[e] *3*	(33/2$^+$)	B D	J$^{\pi}$: 846.3γ Q, ΔJ=2 to (29/2$^+$), 358.7γ D, ΔJ=1 to (31/2$^+$); band assignment.
5000.8[h] *4*	(35/2$^-$)	BCD	J$^{\pi}$: 674.6γ Q, ΔJ=2 to (31/2$^-$); band assignment.
5488.7[d] *4*	(35/2$^+$)	B	J$^{\pi}$: band assignment.
5591.7[h] *4*	(39/2$^-$)	BCD	J$^{\pi}$: 590.9γ Q, ΔJ=2 to (35/2$^-$); band assignment.
5818.5[e] *4*	(37/2$^+$)	B D	J$^{\pi}$: 917.3γ Q, ΔJ=2 to (33/2$^+$), 329.8γ D, ΔJ=1 to (35/2$^+$); band assignment.
5945.1 *4*	(37/2$^+$)	B	J$^{\pi}$: 1043.8γ Q, ΔJ=2 to (33/2$^+$), 456.3γ to (35/2$^+$).
6092.9? *11*		C	E(level): this level perhaps decays to 5002 and 2614 levels as tentatively proposed by 1997Ba56 in (^{18}O,p4nγ), but the γ rays have not been observed.
6423.6 *4*	(41/2$^-$)	BCD	J$^{\pi}$: 831.9γ D, ΔJ=1 to (39/2$^-$).
6651.4 *5*	(41/2$^+$)	B	J$^{\pi}$: 706.2γ Q, ΔJ=2 to (37/2$^+$).
6776.5[h] *4*	(43/2$^-$)	BCD	J$^{\pi}$: 1184.9γ Q, ΔJ=2 to (39/2$^-$), 352.9γ to (41/2$^-$); band assignment.
6785.3? *9*		C	
6937.4[e] *5*	(41/2$^+$)	B	J$^{\pi}$: 1118.8γ Q, ΔJ=2 to (37/2$^+$); band assignment.
7031.1 *7*	(43/2$^-$)	BCD	J$^{\pi}$: 606.6γ to (41/2$^-$).
7177.8[i] *4*	(43/2$^+$)	BCD	J$^{\pi}$: 754.6γ E1, ΔJ=1 to (41/2$^-$); band assignment.
7549.7? *10*		C	
7635.6 *6*	(45/2)	B	J$^{\pi}$: 859.2γ D, ΔJ=1 to (43/2$^-$).
7661.1 *8*	(45/2)	B	J$^{\pi}$: 884.6γ D, ΔJ=1 to (43/2$^-$).
7697.3[i] *5*	(47/2$^+$)	B	J$^{\pi}$: 519.5γ Q, ΔJ=2 to (43/2$^+$); band assignment.
7767.0[h] *5*	(47/2$^-$)	B D	E(level): The order of the 991γ-801γ cascade in (^{18}O,p4nγ) is reversed in (^{48}Ca,p4nγ), resulting in the level at 7766, instead of a level at 7579 in (^{18}O,p4nγ), with the former being adopted. J$^{\pi}$: 990.5γ Q, ΔJ=2 to (43/2$^-$); band assignment in (^{48}Ca,p4nγ). (45/2$^-$) proposed in (^{14}N,α3nγ) based on Mult(990.5γ)=D from $\gamma\gamma$(ADO) data. The former is adopted considering more complete level scheme in (^{48}Ca,p4nγ).
7885.7? *11*		C	
7908.3 *9*	(45/2)	B	J$^{\pi}$: 877.2γ D, ΔJ=1 to (43/2$^-$).
8023.8? *11*		C	
8315.0? *12*		C	
8389.5[i] *5*	(49/2$^+$)	B	J$^{\pi}$: 692.2γ M1, ΔJ=1 to (47/2$^+$); band assignment.
8568.2[h] *5*	(49/2$^-$)	BC	J$^{\pi}$: 801.2γ M1, ΔJ=1 to (47/2$^-$); band assignment.
8985.5? *12*		C	
9137.2[i] *5*	(51/2$^+$)	B	J$^{\pi}$: 1439.9γ Q, ΔJ=2 to (47/2$^+$), 747.7γ D, ΔJ=1 to (49/2$^+$); band assignment.
9285.4[i] *5*	(53/2$^+$)	B	J$^{\pi}$: 895.9γ Q, ΔJ=2 to (49/2$^+$), 148.2γ D, ΔJ=1 to (51/2$^+$); band assignment.
9372.1[h] *5*	(51/2$^-$)	B	J$^{\pi}$: 803.8γ M1, ΔJ=1 to (49/2$^-$); band assignment.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{123}I Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
9723.5[h] *5*	(55/2$^-$)		B	Jπ: 438.1γ E1, ΔJ=1 to (53/2$^+$), 351.4γ Q, ΔJ=2 to (51/2$^-$); band assignment.
10368.9 *6*	(57/2$^+$)		B	Jπ: 1083.5γ Q, ΔJ=2 to (53/2$^+$); band assignment.
10495.5[i] *6*	(55/2$^+$)		B	Jπ: 1210.1γ D, ΔJ=1 to (53/2$^+$); band assignment.
10670.4 *6*	(57/2)		B	Jπ: 946.9γ D, ΔJ=1 to (55/2$^-$).
10754.1[i] *6*	(57/2$^+$)		B	Jπ: 1468.7γ Q, ΔJ=2 to (53/2$^+$), 258.6γ D, ΔJ=1 to (55/2$^+$); band assignment.
10837.3[h] *6*	(59/2$^-$)		B	Jπ: 1113.8γ Q, ΔJ=2 to (55/2$^-$); band assignment.
11057.6 *8*	(57/2)		B	Jπ: 1334.1γ D, ΔJ=1 to (55/2$^-$).
0.0+x[k]	(55/2$^-$)		B	Additional information 1. E(level): x estimated at 11250 keV (2012Si21). Jπ: band head; proposed in (^{48}Ca,p4nγ).
11511.8[i] *6*	(61/2$^+$)		B	Jπ: 757.7γ Q, ΔJ=2 to (57/2$^+$), 674.5γ to (59/2$^-$); band assignment.
11831.5 *8*	(59/2)		B	Jπ: 1161.1γ D, ΔJ=1 to (57/2).
12033.6 *9*	(61/2)		B	Jπ: 1196.3γ D, ΔJ=1 to (59/2$^-$).
12107 *20*	1/2$^+$	51 keV *5*	H	Jπ: L(p,p′)=0 from 0$^+$.
12265 *20*	(3/2)$^+$[#]	33 keV *5*	H	Jπ: L(p,p′)=2 from 0$^+$; IAR of 159-keV, 3/2$^+$ state in ^{123}Te.
12313.4 *9*	(61/2)		B	Jπ: 1476.1γ D, ΔJ=1 to (59/2$^-$).
12441.0 *9*	(61/2)		B	Jπ: 1603.7γ D, ΔJ=1 to (59/2$^-$).
12470.5 *7*	(63/2)		B	Jπ: 958.7γ D, ΔJ=1 to (61/2$^+$).
12631.7 *11*	(63/2)		B	Jπ: 1196.3γ D, ΔJ=1 to (61/2).
12755.9 *9*	63/2		B	Jπ: 1196.3γ D, ΔJ=1 to (59/2$^-$).
12772.9 *9*	(63/2)		B	Jπ: 1261.1γ D, ΔJ=1 to (61/2$^+$).
12916.7 *9*	(63/2)		B	Jπ: 1404.9γ D, ΔJ=1 to (61/2$^+$).
0.0+y[l]	(59/2$^+$)		B	Additional information 2. E(level): y estimated at 13000 keV (2012Si21). Jπ: band head; proposed in (^{48}Ca,p4nγ).
13090.8 *9*			B	
13193.7 *9*			B	
0.0+z[j]	(61/2$^+$)		B	Additional information 3. E(level): z estimated at 13300 keV (2012Si21). Jπ: band head; proposed in (^{48}Ca,p4nγ).
13538 *20*	(3/2$^+$,5/2$^+$)[#]		H	Jπ: L(p,p′)=(2) from 0$^+$.
13668 *20*	(3/2$^+$,5/2$^+$)[#]		H	Jπ: L(p,p′)=(2) from 0$^+$.
13866 *20*	(1/2)[#]	36 keV *5*	H	Jπ: L(p,p′)=(0,1) from 0$^+$.
13974 *20*	(3/2)$^-$[#]	38 keV *5*	H	Jπ: L(p,p′)=1 from 0$^+$; IAS of 1887-keV (3/2)$^-$ level in ^{123}Te.
14072 *20*	(3/2$^-$)[#]	32 keV *7*	H	Jπ: L(p,p′)=(1) from 0$^+$; IAS of 1978-keV (3/2)$^-$ level in ^{123}Te.
14122 *20*	(7/2)$^-$[#]	37 keV *6*	H	Jπ: L(p,p′)=3 from 0$^+$.
14173 *20*	(3/2$^-$)[#]	50 keV *10*	H	Jπ: L(p,p′)=(1) from 0$^+$.
14468? *20*	(1/2$^-$,3/2$^-$)[#]		H	Jπ: L(p,p′)=(1) from 0$^+$.
14658? *20*			H	
14828 *20*	(5/2$^-$,7/2$^-$)[#]		H	Jπ: L(p,p′)=(3) from 0$^+$.
14994 *20*			H	
15798 *20*			H	
1233.0+x[k] *10*	(59/2$^-$)		B	
1240.0+y[l] *10*	(63/2$^+$)		B	
1255.0+z[j] *10*	(65/2$^+$)		B	
2554.0+x[k] *15*	(63/2$^-$)		B	
2585.0+y[l] *15*	(67/2$^+$)		B	
2618.0+z[j] *15*	(69/2$^+$)		B	

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Adopted Levels, Gammas (continued)

^{123}I Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
3976.0+x[k] *18*	(67/2⁻)	B	9138.1+z[j] *25*	(85/2⁺)	B
4048.0+y[l] *18*	(71/2⁺)	B	9201.1+y[l] *25*	(83/2⁺)	B
4080.0+z[j] *18*	(73/2⁺)	B	10762+x[k] *3*	(83/2⁻)	B
5505.0+x[k] *20*	(71/2⁻)	B	11055+z[j] *3*	(89/2⁺)	B
5637.0+y[l] *20*	(75/2⁺)	B	11152+y[l] *3*	(87/2⁺)	B
5651.0+z[j] *20*	(77/2⁺)	B	12678+x[k] *3*	(87/2⁻)	B
7149.0+x[k] *23*	(75/2⁻)	B	13065+z[j] *3*	(93/2⁺)	B
7333.0+z[j] *23*	(81/2⁺)	B	13212+y[l] *3*	(91/2⁺)	B
7352.0+y[l] *23*	(79/2⁺)	B	14674+x[k] *3*	(91/2⁻)	B
8905.1+x[k] *25*	(79/2⁻)	B	15156+z[j] *3*	(97/2⁺)	B

† For a least-squares fit to γ-ray energies for levels connected by γ transitions, unless otherwise noted.
‡ From band assignments for high-spin states where no arguments are given.
# Angular distribution of outgoing p in (p,p′).
@ Band(A): Band based on (21/2⁺), α=+1/2 (2009Zh19, 2012Si04).
& Band(a): Band Based on (23/2⁺), α=−1/2 (2009Zh19, 2012Si04).
[a] Band(B): Dipole band based on (15/2⁺) (1993Go04, 2006Wa05).
[b] Band(c): π9/2[404] band, α=−1/2.
[c] Band(C): π9/2[404] band, α=+1/2.
[d] Band(D): π7/2[404] oblate band based on 7/2⁺, α=−1/2 (2006Wa05).
[e] Band(d): π7/2[404] oblate band based on 9/2⁺, α=+1/2 (2006Wa05).
[f] Band(E): π5/2[413] band, α=+1/2 (2006Wa05).
[g] Band(e): π5/2[413] band, α=−1/2 (2006Wa05).
[h] Band(F): Negative-parity band based on 1/2[550] orbital of $1h_{11/2}$ (1993Go04, 2006Wa05).
[i] Band(G): Band based on (43/2⁺).
[j] Band(H): Band based on (61/2⁺) (2012Si21).
[k] Band(I): Band based on (55/2⁻) (2012Si21).
[l] Band(J): Band based on (59/2⁺) (2012Si21).

Adopted Levels, Gammas (continued)

$\gamma(^{123}I)$

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
138.33	7/2+	138.35 *5*	100	0.0	5/2+	M1+E2	−0.15 *5*	0.306 *6*	α(K)=0.262 *5*; α(L)=0.0353 *14*; α(M)=0.0071 *3* α(N)=0.00144 *6*; α(O)=0.000167 *6* E_γ: weighted average of 138.1 *2* from ^{123}Xe ε decay, 138.2 *2* from (^{48}Ca,p4nγ), 138.2 *5* from (^{14}N,α3nγ), 138.4 *3* from (^{6}Li,3nγ), and 138.38 *5* from (α,2nγ). Mult.: D+Q from $\gamma(\theta)$ in (^{6}Li,3nγ) and (α,2nγ); magnetic and electric nature from ce data in ^{123}Xe ε decay. ΔJ=1 from $\gamma\gamma$(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ). δ: from $\gamma(\theta)$ in (^{6}Li,3nγ).
148.94	1/2+	148.99 *20*	100	0.0	5/2+	E2		0.430	B(E2)(W.u.)=63.1 *10* α(K)=0.328 *5*; α(L)=0.0816 *13*; α(M)=0.0170 *3* α(N)=0.00332 *5*; α(O)=0.000327 *5* E_γ: weighted average of 148.9 *2* from ^{123}Xe ε decay and 149.07 *20* from (α,2nγ). Mult.: from ce data in ^{123}Xe ε decay.
178.04	3/2+	39.9 *3*	0.020 *7*	138.33	7/2+	(E2)		51.3 *17*	B(E2)(W.u.)=74 *+42−32* α(K)=11.30 *18*; α(L)=31.8 *13*; α(M)=6.8 *3* α(N)=1.29 *6*; α(O)=0.112 *5* E_γ,I_γ: from energies and intensities of conversion electrons in ^{123}Xe ε decay. Mult.: M1,E2 from ce data in ^{123}Xe ε decay, ΔJ=2 required by the decay scheme,
		178.05 *20*	100 *5*	0.0	5/2+	M1(+E2)	<0.2	0.151 *3*	α(K)=0.1300 *22*; α(L)=0.0171 *5*; α(M)=0.00345 *11* α(N)=0.000698 *21*; α(O)=8.13×10^{-5} *20* B(M1)(W.u.)=0.0092 *8*; B(E2)(W.u.)<8.6 E_γ: weighted average of 178.1 *2* from ^{123}Xe ε decay and 178.00 *20* from (α,2nγ). I_γ: from ^{123}Xe ε decay. Mult.,δ: from ce data in ^{123}Xe ε decay.
302.2?		302.2[&] *3*	100	0.0	5/2+				E_γ: from (α,2nγ).
330.30	3/2+	192.3 *3*	0.97 *17*	138.33	7/2+	[E2]		0.178	B(E2)(W.u.)=13 *+11−6* α(K)=0.1411 *21*; α(L)=0.0292 *5*; α(M)=0.00606 *10* α(N)=0.001187 *19*; α(O)=0.0001209 *19* E_γ,I_γ: from ^{123}Xe ε decay.
		330.2 *2*	100 *6*	0.0	5/2+	(M1)		0.0291	B(M1)(W.u.)=0.014 *+7−4* α(K)=0.0251 *4*; α(L)=0.00319 *5*; α(M)=0.000641 *9* α(N)=0.0001299 *19*; α(O)=1.528×10^{-5} *22* E_γ: weighted average of 330.2 *2* from ^{123}Xe ε decay and 330.1 *3* from (α,2nγ). I_γ: from ^{123}Xe ε decay.

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Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ‡	I_γ‡	E_f	J_f^π	Mult.‡	δ	α†	Comments
									Mult.: M1,E2 from ce data in ^{123}Xe ε decay; ΔJ=1 from level scheme.
474.20	7/2+	474.17 *11*	100	0.0	5/2+	M1+E2	−0.9 *4*	0.0109 *5*	α(K)=0.0094 *5*; α(L)=0.001244 *22*; α(M)=0.000251 *4* α(N)=5.05×10^{-5} *9*; α(O)=5.82×10^{-6} *16* E_γ: weighted average of 474.3 *2* from (^{48}Ca,p4nγ), 474.3 *5* from (^{14}N,α3nγ), 474.3 *3* from (^{6}Li,3nγ), and 474.11 *11* from (α,2nγ). Mult.,δ: mixing ratio from γ(θ) in (^{6}Li,3nγ), M1 from ce data and γ(θ) in (α,2nγ). ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ).
552.30	9/2+	413.97 *5*	100 *9*	138.33	7/2+	M1+E2	−0.40 *10*	0.01616 *25*	α(K)=0.01393 *23*; α(L)=0.00179 *3*; α(M)=0.000361 *6* α(N)=7.30×10^{-5} *11*; α(O)=8.52×10^{-6} *12* E_γ: weighted average of 413.9 *2* from (^{48}Ca,p4nγ), 413.8 *5* from (^{14}N,α3nγ), 414.0 *3* from (^{6}Li,3nγ), and 413.98 *5* from (α,2nγ). I_γ: from (α,2nγ). Other: 100 *10* from (^{6}Li,3nγ) and (^{14}N,α3nγ). Mult.,δ: mixing ratio from γ(θ) in (^{6}Li,3nγ), M1 from ce data and γ(θ) in (α,2nγ). ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ).
		552.28 *12*	70 *9*	0.0	5/2+	E2		0.00651	α(K)=0.00555 *8*; α(L)=0.000773 *11*; α(M)=0.0001563 *22* α(N)=3.13×10^{-5} *5*; α(O)=3.54×10^{-6} *5* E_γ: weighted average of 552.1 *2* from (^{48}Ca,p4nγ), 552.3 *5* from (^{14}N,α3nγ), 552.4 *3* from (^{6}Li,3nγ), and 552.32 *12* from (α,2nγ). I_γ: unweighted average of 88 *8* from (^{14}N,α3nγ), 57 *6* from (^{6}Li,3nγ), and 64 *5* from (α,2nγ). Mult.: from ce data and γ(θ) in (α,2nγ), γγ(ADO) in (^{14}N,α3nγ), angular intensity ratio in (^{48}Ca,p4nγ), γ(θ) in (^{6}Li,3nγ).
641.27	9/2+	167.08 *20*	1.4 *3*	474.20	7/2+				E_γ,I_γ: from (α,2nγ) only. Intensity normalized to I(641.27γ)=100.
		502.92 *10*	102 *14*	138.33	7/2+	M1+E2	−0.33 *10*	0.00993 *17*	B(M1)(W.u.)=0.00039 *+51−17*; B(E2)(W.u.)=0.12 *+30−8* α(K)=0.00858 *15*; α(L)=0.001085 *16*; α(M)=0.000218 *4* α(N)=4.41×10^{-5} *7*; α(O)=5.18×10^{-6} *8* E_γ: weighted average of 502.8 *5* from (^{14}N,α3nγ), 503.1 *3* from (^{6}Li,3nγ), and 502.90 *10* from (α,2nγ). I_γ: unweighted average of 135 *12* from (^{14}N,α3nγ), 112 *11* from (^{6}Li,3nγ), 86 *4* from (α,2nγ), and 74 *8* from (^{7}Li,6nγ). All intensities are normalized to I(641.27γ)=100. Mult.,δ: mixing ratio from γ(θ) in (^{6}Li,3nγ), M1 from ce data and γ(θ) in (α,2nγ). ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ).
		641.27 *10*	100 *7*	0.0	5/2+	E2		0.00439	B(E2)(W.u.)=0.35 *+43−14* α(K)=0.00376 *6*; α(L)=0.000508 *8*; α(M)=0.0001026 *15* α(N)=2.06×10^{-5} *3*; α(O)=2.35×10^{-6} *4* E_γ: weighted average of 641.3 *5* from (^{14}N,α3nγ), 641.3 *3* from (^{6}Li,3nγ), and 641.26 *10* from (α,2nγ). I_γ: from (α,2nγ). Others: 100 *12* from (^{14}N,α3nγ), 100 *11* from

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Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
								(^{6}Li,3nγ), and 100 *11* from (^{7}Li,6nγ). Mult.: from ce data and γ(θ) in (α,2nγ), γγ(ADO) in (^{14}N,α3nγ), and γ(θ) in (^{6}Li,3nγ).
671.00	9/2$^+$	118.73 *20*	0.9 *2*	552.30	9/2$^+$			E_γ: weighted average of 118.8 *2* from (^{48}Ca,p4nγ), 119.0 *10* from (^{14}N,α3nγ), and 118.64 *20* from (α,2nγ). I_γ: from (α,2nγ). Other: <2.6 from (^{14}N,α3nγ).
		196.7 *2*	3.9 *7*	474.20	7/2$^+$	(M1)	0.1143	α(K)=0.0985 *14*; α(L)=0.01270 *19*; α(M)=0.00256 *4* α(N)=0.000518 *8*; α(O)=6.07×10^{-5} *9* E_γ: weighted average of 196.6 *2* from (^{48}Ca,p4nγ), 196.8 *5* from (^{14}N,α3nγ), and 196.8 *3* from (α,2nγ). I_γ: weighted average of 5.1 *13* from (^{14}N,α3nγ) and 3.6 *7* from (α,2nγ). Mult.: D, ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ); magnetic nature from level scheme.
		532.60 *20*	29 *3*	138.33	7/2$^+$	(M1)	0.00877	α(K)=0.00759 *11*; α(L)=0.000948 *14*; α(M)=0.000190 *3* α(N)=3.85×10^{-5} *6*; α(O)=4.54×10^{-6} *7* E_γ: weighted average of 532.7 *2* from (^{48}Ca,p4nγ), 532.3 *5* from (^{14}N,α3nγ), 532.6 *3* from (^{6}Li,3nγ), and 532.55 *20* from (α,2nγ). I_γ: weighted average of 32 *3* from (^{14}N,α3nγ), 30 *3* from (^{6}Li,3nγ), and 23 *4* from (α,2nγ). Mult.: D, ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ); D also from γ(θ) in (α,2nγ) and (^{6}Li,3nγ); magnetic nature from level scheme.
		671.01 *6*	100 *5*	0.0	5/2$^+$	E2	0.00391	α(K)=0.00335 *5*; α(L)=0.000450 *7*; α(M)=9.07×10^{-5} *13* α(N)=1.82×10^{-5} *3*; α(O)=2.09×10^{-6} *3* E_γ: weighted average of 670.9 *2* from (^{48}Ca,p4nγ), 670.8 *5* from (^{14}N,α3nγ), 671.1 *3* from (^{6}Li,3nγ), and 671.02 *6* from (α,2nγ). I_γ: from (^{14}N,α3nγ). Others: 100 *24* from (^{6}Li,3nγ) and 100 *10* from (α,2nγ). Mult.: from ce data and γ(θ) in (α,2nγ), γγ(ADO) in (^{14}N,α3nγ), angular intensity ratio in (^{48}Ca,p4nγ), γ(θ) in (^{6}Li,3nγ).
794.08	11/2$^+$	241.73 *20*	7.8 *14*	552.30	9/2$^+$	(M1)	0.0658	α(K)=0.0567 *8*; α(L)=0.00727 *11*; α(M)=0.001463 *21* α(N)=0.000296 *5*; α(O)=3.48×10^{-5} *5* E_γ: weighted average of 241.8 *2* from (^{48}Ca,p4nγ), 241.5 *5* from (^{14}N,α3nγ), and 241.69 *20* from (α,2nγ). I_γ: from (α,2nγ). Other: 43 *7* from (^{14}N,α3nγ) is discrepant. This γ is not seen in (^{6}Li,3nγ), probably very weak compared to 655.8γ seen in that study. Mult.: D, ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ); magnetic nature from level scheme.
		655.75 *10*	100 *7*	138.33	7/2$^+$	E2	0.00415	α(K)=0.00355 *5*; α(L)=0.000478 *7*; α(M)=9.65×10^{-5} *14* α(N)=1.94×10^{-5} *3*; α(O)=2.22×10^{-6} *4* E_γ: weighted average of 655.7 *6* from (^{48}Ca,p4nγ), 655.8 *5* from (^{14}N,α3nγ), 655.9 *3* from (^{6}Li,3nγ), and 655.73 *10* from (α,2nγ). I_γ: from (α,2nγ). Other: 100 *14* from (^{14}N,α3nγ).

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Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
									Mult.: from ce data and γ(θ) in (α,2nγ), γγ(ADO) in (^{14}N,α3nγ), angular intensity ratio in (^{48}Ca,p4nγ), and γ(θ) in (^{6}Li,3nγ).
943.46	11/2$^-$	149.3[&] *2*		794.08	11/2$^+$	[E1]		0.0663	α(K)=0.0572 *9*; α(L)=0.00732 *11*; α(M)=0.001463 *22* α(N)=0.000293 *5*; α(O)=3.30×10^{-5} *5* E_γ: from (^{48}Ca,p4nγ) only.
		272.45 *5*	100 *5*	671.00	9/2$^+$	E1		0.01279	B(E1)(W.u.)=5.5×10^{-5} *+59−20* α(K)=0.01106 *16*; α(L)=0.001383 *20*; α(M)=0.000277 *4* α(N)=5.56×10^{-5} *8*; α(O)=6.40×10^{-6} *9* E_γ: weighted average of 272.3 *2* from (^{48}Ca,p4nγ), 272.3 *5* from (^{14}N,α3nγ), 272.6 *3* from (^{6}Li,3nγ), and 272.46 *5* from (α,2nγ). I_γ: from (α,2nγ). Others: 100 *6* from (^{14}N,α3nγ) and 100 *10* from (^{6}Li,3nγ). Mult.: from ce data and γ(θ) in (α,2nγ), γγ(ADO) in (^{14}N,α3nγ) (ΔJ=1), angular intensity ratio and γ(pol) in (^{48}Ca,p4nγ), γ(θ) in (^{6}Li,3nγ).
		391.23 *20*	22 *3*	552.30	9/2$^+$	(E1)		0.00505	B(E1)(W.u.)=4.1×10^{-6} *+54−18* α(K)=0.00437 *7*; α(L)=0.000541 *8*; α(M)=0.0001081 *16* α(N)=2.18×10^{-5} *3*; α(O)=2.53×10^{-6} *4* E_γ: weighted average of 391.1 *4* from (^{48}Ca,p4nγ), 391.3 *5* from (^{14}N,α3nγ), 391.5 *3* from (^{6}Li,3nγ), and 391.14 *20* from (α,2nγ). I_γ: weighted average of 26 *4* from (^{14}N,α3nγ), 28 *7* from (^{6}Li,3nγ), and 19 *3* from (α,2nγ). Mult.: D, ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ); electric nature from level scheme.
972.42	11/2$^+$	331.16 *5*	100	641.27	9/2$^+$	M1+E2	+0.25 *4*	0.0289	α(K)=0.0249 *4*; α(L)=0.00321 *5*; α(M)=0.000646 *10* α(N)=0.0001307 *20*; α(O)=1.529×10^{-5} *22* E_γ: weighted average of 330.8 *5* from (^{14}N,α3nγ), 331.2 *3* from (^{6}Li,3nγ), and 331.16 *5* from (α,2nγ). Mult.,δ: mixing ratio from γ(θ) in (^{6}Li,3nγ), ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ); magnetic and electric nature from ce data in (α,2nγ).
1011.07	(3/2)$^+$	680.5 *2*	46 *3*	330.30	3/2$^+$	M1		0.00485	α(K)=0.00420 *6*; α(L)=0.000521 *8*; α(M)=0.0001044 *15* α(N)=2.12×10^{-5} *3*; α(O)=2.50×10^{-6} *4*
		833.3 *3*	8.9 *11*	178.04	3/2$^+$				
		862.2 *3*	7.8 *11*	148.94	1/2$^+$				
		1011.3 *5*	100 *11*	0.0	5/2$^+$				
1048.71	1/2$^+$	718.5 *2*	7.0 *6*	330.30	3/2$^+$	(M1)		0.00427	α(K)=0.00370 *6*; α(L)=0.000457 *7*; α(M)=9.16×10^{-5} *13* α(N)=1.86×10^{-5} *3*; α(O)=2.19×10^{-6} *3* Mult.: D,E2 from ce data in ^{123}Xe ε decay; M1 required by level scheme.

Adopted Levels, Gammas (continued)

$\gamma(^{123}I)$ (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.‡	δ	α †	Comments
1048.71	$1/2^+$	870.7 *3*	11.6 *14*	178.04	$3/2^+$	M1(+E2)		0.0024 *4*	α(K)=0.0021 *3*; α(L)=0.00026 *3*; α(M)=5.2×10^{-5} *6* α(N)=1.06×10^{-5} *12*; α(O)=1.24×10^{-6} *16*
		899.6 *4*	100 *10*	148.94	$1/2^+$	M1		0.00252	α(K)=0.00219 *3*; α(L)=0.000269 *4*; α(M)=5.38×10^{-5} *8* α(N)=1.092×10^{-5} *16*; α(O)=1.290×10^{-6} *19*
		1048.9 *3*	5.6 *6*	0.0	$5/2^+$	[E2]		1.38×10^{-3}	α(K)=0.001193 *17*; α(L)=0.0001505 *21*; α(M)=3.02×10^{-5} *5* α(N)=6.10×10^{-6} *9*; α(O)=7.11×10^{-7} *10*
1080.22	$11/2^{(+)}$	409.1 *6*	5.0 *10*	671.00	$9/2^+$	(D)			E_γ: weighted average of 409.2 *6* from (^{48}Ca,p4nγ), 409.0 *10* from (^{14}N,α3nγ), and 409 *1* from (α,2nγ). Mult.: from $\gamma\gamma$(ADO) in (^{14}N,α3nγ). I_γ: from (α,2nγ). Other: <13 from (^{14}N,α3nγ).
		528.0 *6*	5.0 *10*	552.30	$9/2^+$				E_γ: weighted average of 528.0 *6* from (^{48}Ca,p4nγ), 527.8 *10* from (^{14}N,α3nγ), and 528 *1* from (α,2nγ). I_γ: from (α,2nγ). Other: <19 from (^{14}N,α3nγ).
		606.00 *20*	100 *10*	474.20	$7/2^+$	Q			E_γ: weighted average of 605.8 *6* from (^{48}Ca,p4nγ), 605.8 *5* from (^{14}N,α3nγ), 606.2 *3* from (^{6}Li,3nγ), and 606.00 *20* from (α,2nγ). I_γ: from (α,2nγ). Other: 100 *13* from (^{14}N,α3nγ). Mult.: from $\gamma\gamma$(ADO) in (^{14}N,α3nγ), angular intensity ratio in (^{48}Ca,p4nγ), $\gamma(\theta)$ in (α,2nγ) and (^{6}Li,3nγ).
1113.12	$(1/2,3/2)^+$	782.9 *2*	28 *3*	330.30	$3/2^+$	M1,E2		0.0031 *4*	α(K)=0.0027 *4*; α(L)=0.00034 *4*; α(M)=6.8×10^{-5} *7* α(N)=1.37×10^{-5} *15*; α(O)=1.60×10^{-6} *20*
		934.9 *3*	20 *2*	178.04	$3/2^+$	M1,E2		0.0020 *3*	α(K)=0.00177 *24*; α(L)=0.00022 *3*; α(M)=4.4×10^{-5} *5* α(N)=9.0×10^{-6} *11*; α(O)=1.05×10^{-6} *13*
		964.0 *3*	34 *3*	148.94	$1/2^+$	M1,E2		0.00191 *25*	α(K)=0.00165 *22*; α(L)=0.000206 *24*; α(M)=4.1×10^{-5} *5* α(N)=8.3×10^{-6} *10*; α(O)=9.8×10^{-7} *12*
		1113.1 *3*	100 *9*	0.0	$5/2^+$	E2(+M1)		0.00139 *17*	α(K)=0.00120 *15*; α(L)=0.000148 *17*; α(M)=3.0×10^{-5} *4* α(N)=6.0×10^{-6} *7*; α(O)=7.1×10^{-7} *9*; α(IPF)=6.6×10^{-7} *4*
1153.4?	$(3/2)^+$	823.5& *3*	15 *5*	330.30	$3/2^+$				
		973.8&	60	178.04	$3/2^+$				
		1004.2& *3*	75 *10*	148.94	$1/2^+$				
		1153.8& *3*	100 *10*	0.0	$5/2^+$				
1156.11	$13/2^+$	362.1 *2*	12.8 *13*	794.08	$11/2^+$	M1+E2	−0.43 *10*	0.0229	α(K)=0.0197 *3*; α(L)=0.00257 *5*; α(M)=0.000518 *9*

Adopted Levels, Gammas (continued)

$\gamma(^{123}I)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
									α(N)=0.0001047 *18*; α(O)=1.216×10^{-5} *18* E_γ: weighted average of 361.9 *4* from (^{48}Ca,p4nγ), 362.3 *5* from (^{14}N,α3nγ), 362.3 *3* from (^{6}Li,3nγ), and 362.1 *2* from (α,2nγ). I_γ: weighted average of 16.0 *20* from (^{14}N,α3nγ), 11.6 *12* from (^{6}Li,3nγ), and 13.3 *24* from (α,2nγ). Other: 5.6 *3* from (^{48}Ca,p4nγ) is discrepant. Mult.: mixing ratio from $\gamma(\theta)$ in (^{6}Li,3nγ), ΔJ=1 from $\gamma\gamma$(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ); magnetic and electric nature from ce data in (α,2nγ).
1156.11	13/2$^+$	603.85 *20*	100 *5*	552.30	9/2$^+$	(E2)		0.00513	α(K)=0.00438 *7*; α(L)=0.000600 *9*; α(M)=0.0001211 *17* α(N)=2.43×10^{-5} *4*; α(O)=2.76×10^{-6} *4* E_γ: weighted average of 603.7 *2* from (^{48}Ca,p4nγ), 603.8 *5* from (^{14}N,α3nγ), 604.1 *3* from (^{6}Li,3nγ), and 603.90 *20* from (α,2nγ). I_γ: from (^{48}Ca,p4nγ). Others: 100 *8* from (^{14}N,α3nγ), 100 *11* from (^{6}Li,3nγ), and 100 *13* from (α,2nγ). Mult.: Q, ΔJ=2 from $\gamma\gamma$(ADO) in (^{14}N,α3nγ), $\gamma(\theta)$ in (α,2nγ) and (^{6}Li,3nγ); electric nature required by level scheme.
1189.9?	(1/2$^+$,3/2,5/2$^+$)	859.7[&] *3*	60 *7*	330.30	3/2$^+$				
		1041.0[&] *3*	100 *13*	148.94	1/2$^+$				
		1189.9[&] *3*	73 *7*	0.0	5/2$^+$				
1242.38	1/2$^+$	912.0 *4*	3.0 *4*	330.30	3/2$^+$	M1		0.00244	α(K)=0.00212 *3*; α(L)=0.000260 *4*; α(M)=5.21×10^{-5} *8* α(N)=1.057×10^{-5} *15*; α(O)=1.250×10^{-6} *18*
		1064.3 *4*	23.7 *26*	178.04	3/2$^+$	M1,E2		0.00153 *20*	α(K)=0.00132 *17*; α(L)=0.000164 *19*; α(M)=3.3×10^{-5} *4* α(N)=6.7×10^{-6} *8*; α(O)=7.8×10^{-7} *10*
		1093.4 *3*	100 *9*	148.94	1/2$^+$	(M1)		0.00162	α(K)=0.001403 *20*; α(L)=0.0001714 *24*; α(M)=3.43×10^{-5} *5* α(N)=6.96×10^{-6} *10*; α(O)=8.23×10^{-7} *12* Mult.: M1,E2 from ce data in ^{123}Xe ε decay; M1 from level scheme.
		1242.0[@] *4*	4[@] *4*	0.0	5/2$^+$				
1310.12	(3/2)$^+$	979.4 *3*	100 *12*	330.30	3/2$^+$	M1(+E2)		0.00184 *24*	α(K)=0.00159 *21*; α(L)=0.000198 *23*; α(M)=4.0×10^{-5} *5* α(N)=8.0×10^{-6} *10*; α(O)=9.4×10^{-7} *12*
		1132.2 *3*	21 *2*	178.04	3/2$^+$				
		1161.3 *3*	36 *4*	148.94	1/2$^+$				
		1310.3 *3*	47 *4*	0.0	5/2$^+$				

$^{123}_{53}I_{70}$-13

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
1315.52	13/2$^+$	343.12 *10*	100 *6*	972.42	11/2$^+$	M1+E2	+0.20 *3*	0.0264	α(K)=0.0228 *4*; α(L)=0.00291 *5*; α(M)=0.000585 *9* α(N)=0.0001185 *17*; α(O)=1.389×10^{-5} *20* E_γ: weighted average of 343.3 *5* from (^{14}N,α3nγ), 343.2 *3* from (^{6}Li,3nγ), and 343.10 *10* from (α,2nγ). I_γ: from (α,2nγ). Others: 100 *7* from (^{14}N,α3nγ), 100 *11* from (^{6}Li,3nγ), and 100 *11* from (^{7}Li,6nγ). Mult.,δ: mixing ratio from γ(θ) in (^{6}Li,3nγ), M1+E2 with δ≈=+0.2 from ce data in (α,2nγ). ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ).
		674.2 *2*	31 *4*	641.27	9/2$^+$	Q			E_γ: weighted average of 674.3 *5* from (^{14}N,α3nγ), 674.3 *3* from (^{6}Li,3nγ), and 674.2 *2* from (α,2nγ). I_γ: weighted average of 32 *7* from (^{14}N,α3nγ), 38 *5* from (^{6}Li,3nγ), 31 *6* from (α,2nγ), and 25 *4* from (^{7}Li,6nγ). Mult.: from γγ(ADO) in (^{14}N,α3nγ) (ΔJ=2), γ(θ) in (α,2nγ) and (^{6}Li,3nγ).
1390.82	(1/2,3/2)$^+$	1060.7 *4*	100 *13*	330.30	3/2$^+$	M1		1.73×10^{-3}	α(K)=0.001503 *21*; α(L)=0.000184 *3*; α(M)=3.68×10^{-5} *6* α(N)=7.46×10^{-6} *11*; α(O)=8.82×10^{-7} *13*
		1242.0[@] *4*	58[@] *13*	148.94	1/2$^+$				
		1390.9 *3*	15.0 *13*	0.0	5/2$^+$				
1437.4	13/2$^{(+)}$	357.3 *3*	20 *4*	1080.22	11/2$^{(+)}$				E_γ: weighted average of 356.8 *10* from (^{14}N,α3nγ) and 357.3 *3* from (α,2nγ). I_γ: from (α,2nγ). Other: <75 from (^{14}N,α3nγ).
		643[&] *1*	10 *2*	794.08	11/2$^+$				E_γ,I_γ: from (α,2nγ) only.
		766.2 *5*	100 *15*	671.00	9/2$^+$	Q			E_γ: weighted average of 765.5 *5* from (^{14}N,α3nγ) and 766.5 *3* from (α,2nγ). I_γ: from (α,2nγ). Other: 100 *25* from (^{14}N,α3nγ). Mult.: from γ(θ) in (α,2nγ).
1453.00	15/2$^-$	509.55 *5*	100	943.46	11/2$^-$	E2		0.00812	α(K)=0.00690 *10*; α(L)=0.000979 *14*; α(M)=0.000198 *3* α(N)=3.97×10^{-5} *6*; α(O)=4.46×10^{-6} *7* E_γ: weighted average of 509.5 *2* from (^{48}Ca,p4nγ), 509.2 *2* from (^{18}O,p4nγ), 509.5 *5* from (^{14}N,α3nγ), 510 *1* from (^{6}Li,3nγ), and 509.57 *5* from (α,2nγ). Mult.: from ce and γ(θ) in (α,2nγ), ΔJ=2 from γγ(ADO) and angular intensity ratio in (^{48}Ca,p4nγ).
1576.58	15/2$^{(+)}$	420.4 *3*	7.5 *5*	1156.11	13/2$^+$				E_γ: weighted average of 420.5 *6* from (^{48}Ca,p4nγ),

$^{123}_{53}I_{70}$-14

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
									420.3 *10* from (^{14}N,α3nγ), and 420.4 *3* from (α,2nγ).
									I_γ: weighted average of 7.4 *5* from (^{48}Ca,p4nγ) and 8.3 *17* from (α,2nγ).
1576.58	15/2$^{(+)}$	782.4 *2*	100 *5*	794.08	11/2$^+$	Q			E_γ: weighted average of 782.4 *2* from (^{48}Ca,p4nγ), 782.5 *5* from (^{14}N,α3nγ), 782.5 *3* from (^{6}Li,3nγ), and 782.4 *2* from (α,2nγ).
									I_γ: from (^{48}Ca,p4nγ). Others: 100 *14* from (^{14}N,α3nγ) and 100 *14* from (α,2nγ).
									Mult.: from γ(θ) in (α,2nγ) and (^{6}Li,3nγ), ΔJ=2 from γγ(ADO) and angular intensity ratio in (^{48}Ca,p4nγ).
1602.46	(15/2$^+$)	629.9 *3*	100 *11*	972.42	11/2$^+$	(Q)			E_γ: weighted average of 629.8 *5* from (^{14}N,α3nγ) and 630.0 *3* from (α,2nγ). Other: 629.8 from (^{7}Li,6nγ).
									I_γ: from (^{7}Li,6nγ).
									Mult.: from γγ(ADO) in (^{14}N,α3nγ) and γ(θ) in (α,2nγ).
		961.1[&]	21 *2*	641.27	9/2$^+$	[M3]			E_γ,I_γ: from (^{7}Li,6nγ) only.
1607.07?	(15/2$^+$)	291.55 *10*	100	1315.52	13/2$^+$	(M1+E2)		0.0421 *21*	α(K)=0.0356 *10*; α(L)=0.0053 *9*; α(M)=0.00107 *19* α(N)=0.00021 *4*; α(O)=2.4×10^{-5} *3*
									E_γ,Mult.: from (α,2nγ), with Mult from ce data and γ(θ).
1632.56	(13/2$^-$)	689.1 *2*	100	943.46	11/2$^-$	(M1+E2)		0.0042 *6*	α(K)=0.0036 *5*; α(L)=0.00046 *5*; α(M)=9.3×10^{-5} *9* α(N)=1.88×10^{-5} *18*; α(O)=2.19×10^{-6} *25*
									E_γ,Mult.: from (α,2nγ), with Mult from ce data and γ(θ).
1657.1	(3/2)$^+$	1326.8[&] *3*	7.4 *19*	330.30	3/2$^+$				
		1508.4[&] *3*	37 *4*	148.94	1/2$^+$				
		1656.8[&] *4*	100 *11*	0.0	5/2$^+$				
1690.39	15/2$^+$	374.86 *20*	100 *9*	1315.52	13/2$^+$	M1+E2	+0.15 *3*	0.0210	α(K)=0.0182 *3*; α(L)=0.00230 *4*; α(M)=0.000463 *7* α(N)=9.38×10^{-5} *14*; α(O)=1.102×10^{-5} *16*
									E_γ: weighted average of 374.8 *5* from (^{14}N,α3nγ), 375.0 *3* from (^{6}Li,3nγ), and 374.81 *20* from (α,2nγ).
									I_γ: from (^{7}Li,6nγ). Others: 100 *10* from (^{14}N,α3nγ), 100 *11* from (^{6}Li,3nγ), and 100 *13* from (α,2nγ).
									Mult.,δ: mixing ratio from γ(θ) in (^{6}Li,3nγ), M1+E2 with δ≈=+0.2 from ce data in (α,2nγ). ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ).
		718.0 *2*	36 *4*	972.42	11/2$^+$	Q			E_γ: weighted average of 717.8 *5* from (^{14}N,α3nγ), 718.1 *3* from (^{6}Li,3nγ), and 717.9 *2* from (α,2nγ).
									I_γ: unweighted average of 45 *5* from (^{14}N,α3nγ), 25.5 *21* from (^{6}Li,3nγ), 35 *13* from (α,2nγ), and 37 *4* from (^{7}Li,6nγ).
									Mult.: from γγ(ADO) (ΔJ=2) in (^{14}N,α3nγ) and γ(θ) in (^{6}Li,3nγ).

$^{123}_{53}I_{70}$-15

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
1791.4	(15/2$^+$)	711.1 *2*	100	1080.22	11/2$^{(+)}$	E2	0.00338	α(K)=0.00290 *4*; α(L)=0.000386 *6*; α(M)=7.77×10^{-5} *11* α(N)=1.564×10^{-5} *22*; α(O)=1.79×10^{-6} *3* E_γ: weighted average of 711.2 *4* from (^{48}Ca,p4nγ), 711.2 *5* from (^{14}N,α3nγ), 711.3 *3* from (^{6}Li,3nγ), and 711.0 *2* from (α,2nγ). Mult.: Q, ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ), supported by γ(θ) in (^{6}Li,3nγ) and (α,2nγ); M1,E2 from ce data in (α,2nγ).
1816.0?		208.96 *20*	100	1607.07?	(15/2$^+$)			E_γ: from (α,2nγ) only.
1864.91	1/2$^+$	474.2 *2*	16.8 *24*	1390.82	(1/2,3/2)$^+$	M1,E2	0.0108 *9*	α(K)=0.0093 *9*; α(L)=0.00124 *3*; α(M)=0.000250 *6* α(N)=5.04×10^{-5} *13*; α(O)=5.8×10^{-6} *3*
		816.3 *3*	12.0 *16*	1048.71	1/2$^+$	(M1)	0.00316	α(K)=0.00274 *4*; α(L)=0.000338 *5*; α(M)=6.76×10^{-5} *10* α(N)=1.372×10^{-5} *20*; α(O)=1.620×10^{-6} *23*
		853.5 *3*	4.8 *8*	1011.07	(3/2)$^+$			
		1534.9 *3*	50 *5*	330.30	3/2$^+$			
		1686.8 *3*	100 *12*	178.04	3/2$^+$			
		1715.9 *3*	31 *4*	148.94	1/2$^+$			
		1864.7 *3*	10.4 *16*	0.0	5/2$^+$	[E2]	0.000672 *10*	α=0.000672 *10*; α(K)=0.000381 *6*; α(L)=4.61×10^{-5} *7*; α(M)=9.20×10^{-6} *13* α(N)=1.86×10^{-6} *3*; α(O)=2.20×10^{-7} *3*; α(IPF)=0.000233 *4*
1871.25	17/2$^+$	294.6 *3*	5.4 *12*	1576.58	15/2$^{(+)}$			E_γ: weighted average of 294.4 *6* from (^{48}Ca,p4nγ), 294.5 *10* from (^{14}N,α3nγ), and 294.7 *3* from (α,2nγ). I_γ: weighted average of 4.3 *20* from (^{48}Ca,p4nγ) and 5.8 *12* from (α,2nγ). Other: <3.6 in (^{14}N,α3nγ).
		715.17 *10*	100 *5*	1156.11	13/2$^+$	E2	0.00334	α(K)=0.00286 *4*; α(L)=0.000380 *6*; α(M)=7.66×10^{-5} *11* α(N)=1.541×10^{-5} *22*; α(O)=1.768×10^{-6} *25* E_γ: weighted average of 714.9 *2* from (^{48}Ca,p4nγ), 715.3 *5* from (^{14}N,α3nγ), 715.4 *3* from (^{6}Li,3nγ), and 715.20 *10* from (α,2nγ). I_γ: from (^{48}Ca,p4nγ). Others: 100 *7* from (^{14}N,α3nγ) and 100 *17* from (α,2nγ). Mult.: from ce and γ(θ) data in (α,2nγ), ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ).
1934.16	(1/2,3/2,5/2)$^+$	691.5 *3*	51 *7*	1242.38	1/2$^+$	M1,E2	0.0041 *6*	α(K)=0.0036 *5*; α(L)=0.00046 *5*; α(M)=9.2×10^{-5} *9* α(N)=1.86×10^{-5} *18*; α(O)=2.17×10^{-6} *24*
		1603.9 *3*	78 *7*	330.30	3/2$^+$			
		1756.1 *3*	42 *5*	178.04	3/2$^+$			
		1785.4 *3*	13 *2*	148.94	1/2$^+$			
		1934.2 *3*	100 *11*	0.0	5/2$^+$			
1956.10	3/2$^+$	802.7 *3*	1.6 *4*	1153.4?	(3/2)$^+$			
		842.7 *3*	3.1 *4*	1113.12	(1/2,3/2)$^+$			

$^{123}_{53}I_{70}$-16

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
1956.10	3/2$^+$	1625.9 *3*	47 *4*	330.30	3/2$^+$			
		1778.2 *3*	7.8 *8*	178.04	3/2$^+$			
		1807.3 *3*	100 *10*	148.94	1/2$^+$			
		1955.9 *3*	7.8 *12*	0.0	5/2$^+$			
2000.6?	(+)	310.17 *20*	100	1690.39	15/2$^+$	(M1,E2)	0.0352 *11*	α(K)=0.0298 *5*; α(L)=0.0043 *6*; α(M)=0.00088 *13* α(N)=0.000176 *24*; α(O)=1.97×10^{-5} *18* E_γ,Mult.: from (α,2nγ), with Mult from ce and γ(θ) data.
2016.12	(17/2$^+$)	413.6 *2*	100 *9*	1602.46	(15/2$^+$)	(M1+E2)	0.0156 *9*	α(K)=0.0133 *9*; α(L)=0.00183 *5*; α(M)=0.000369 *12* α(N)=7.43×10^{-5} *19*; α(O)=8.47×10^{-6} *16* E_γ: weighted average of 413.5 *5* from (^{14}N,α3nγ) and 413.6 *2* from (α,2nγ). Other: 413.7 from (^{7}Li,6nγ). I_γ: from (^{7}Li,6nγ). Others: 100 *17* from (α,2nγ), 100 *22* from (^{14}N,α3nγ). Mult.: from ce and γ(θ) data in (α,2nγ), D (ΔJ=1) from γγ(ADO) in (^{14}N,α3nγ).
		700.6 *2*	54 *4*	1315.52	13/2$^+$	(E2)	0.00351	α(K)=0.00301 *5*; α(L)=0.000401 *6*; α(M)=8.08×10^{-5} *12* α(N)=1.627×10^{-5} *23*; α(O)=1.86×10^{-6} *3* E_γ: weighted average of 700.8 *5* from (^{14}N,α3nγ) and 700.6 *2* from (α,2nγ). Other: 700.4 from (^{7}Li,6nγ). I_γ: weighted average of 52 *4* from (^{7}Li,6nγ), 56 *11* from (^{14}N,α3nγ) and 75 *17* from (α,2nγ). Mult.: (M1,E2) from ce and γ(θ) data in (α,2nγ), Q (ΔJ=2) from γγ(ADO) in (^{14}N,α3nγ).
2039.67	19/2$^-$	586.68 *11*	100	1453.00	15/2$^-$	E2	0.00554	α(K)=0.00473 *7*; α(L)=0.000650 *10*; α(M)=0.0001314 *19* α(N)=2.64×10^{-5} *4*; α(O)=2.99×10^{-6} *5* E_γ: weighted average of 586.6 *2* from (^{48}Ca,p4nγ), 586.6 *2* from (^{18}O,p4nγ), 586.8 *5* from (^{14}N,α3nγ), 586.8 *3* from (^{6}Li,3nγ), and 586.71 *11* from (α,2nγ). Mult.: from ce and γ(θ) data in (α,2nγ), ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ), γγ(DCO) in (^{18}O,p4nγ) and angular intensity ratio in (^{48}Ca,p4nγ).
2062.52	(1/2,3/2,5/2)$^+$	671.7 *2*	7.7 *15*	1390.82	(1/2,3/2)$^+$			
		752.4 *2*	9.2 *15*	1310.12	(3/2)$^+$			
		820.1 *3*	9.2 *15*	1242.38	1/2$^+$			
		909.0 *4*	13.8 *15*	1153.4?	(3/2)$^+$	M1	0.00246	α(K)=0.00214 *3*; α(L)=0.000262 *4*; α(M)=5.25×10^{-5} *8* α(N)=1.066×10^{-5} *15*; α(O)=1.260×10^{-6} *18*
		949.5 *3*	4.6 *8*	1113.12	(1/2,3/2)$^+$			
		1013.5 *5*	18.5 *23*	1048.71	1/2$^+$			
		1732.2 *3*	22 *3*	330.30	3/2$^+$			
		1884.5 *3*	100 *12*	178.04	3/2$^+$			
		1913.5 *4*	11.5 *15*	148.94	1/2$^+$			
		2062.6 *4*	7.7 *15*	0.0	5/2$^+$			

$^{123}_{53}I_{70}$-17

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	Comments
2082.06	17/2$^{(+)}$	391.65 *20*	100 *13*	1690.39	15/2$^+$	D	E_γ: weighted average of 391.8 *5* from (^{14}N,α3nγ), 391.5 *3* from (^{6}Li,3nγ), and 391.70 *20* from (α,2nγ). Mult.: ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ). I_γ: from (^{14}N,α3nγ). Others: 100 *45* from (^{6}Li,3nγ) and 100 *20* from (α,2nγ).
		766.6 *3*	46 *7*	1315.52	13/2$^+$	Q	E_γ: weighted average of 766.8 *5* from (^{14}N,α3nγ), 766.6 *3* from (^{6}Li,3nγ), and 766.5 *3* from (α,2nγ). I_γ: weighted average of 44 *6* from (^{14}N,α3nγ) and 70 *20* from (α,2nγ). Other: 13.2 *13* from (^{6}Li,3nγ) seems discrepant. Mult.: ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ), supported by γ(θ) in (α,2nγ) for a doublet and γ(θ) in (^{6}Li,3nγ).
2152.43	(1/2$^+$,3/2)	1822.3 *3*	66 *8*	330.30	3/2$^+$		
		1974.3 *3*	74 *11*	178.04	3/2$^+$		
		2003.3 *4*	100 *13*	148.94	1/2$^+$		
		2151.7[#&] *5*	<11	0.0	5/2$^+$		
2201.35	(1/2$^+$,3/2)	1871.1 *3*	100 *17*	330.30	3/2$^+$		
		2052.4 *4*	75 *8*	148.94	1/2$^+$		
		2201.2 *4*	75 *17*	0.0	5/2$^+$		
2250.06	(3/2)$^+$	1201.5 *3*	56 *6*	1048.71	1/2$^+$		
		1919.8 *4*	15 *3*	330.30	3/2$^+$		
		2071.9 *4*	100 *12*	178.04	3/2$^+$		
		2101.3 *4*	94 *12*	148.94	1/2$^+$		
		2249.6 *4*	7.4 *15*	0.0	5/2$^+$		
2262.1		629.5 *3*	100	1632.56	(13/2$^-$)		E_γ: from (α,2nγ) only.
2265.61	(17/2$^-$)	812.6 *2*	100	1453.00	15/2$^-$	D+Q	E_γ,Mult.: from (α,2nγ), with Mult from γ(θ).
2283.0	(17/2$^+$)	845.6 *5*	100	1437.4	13/2$^{(+)}$		E_γ: weighted average of 845.8 *5* from (^{14}N,α3nγ) and 845 *1* from (α,2nγ).
2285.55	1/2$^+$	1237.1 *4*	100 *15*	1048.71	1/2$^+$		
		1274.6 *3*	45 *5*	1011.07	(3/2)$^+$		
		2107.0 *5*	20 *5*	178.04	3/2$^+$		
		2136.4 *4*	25 *5*	148.94	1/2$^+$		
2319.6		687 *1*	100	1632.56	(13/2$^-$)		E_γ: from (α,2nγ) only.
2322.7	(1/2,3/2)	1992.5 *4*	69 *8*	330.30	3/2$^+$		
		2144.6 *4*	54 *8*	178.04	3/2$^+$		
		2173.5 *5*	100 *15*	148.94	1/2$^+$		
2327.4	(1/2$^+$,3/2)	2151.7[#&] *5*	<51	178.04	3/2$^+$		
		2178.5 *5*	100 *13*	148.94	1/2$^+$		
		2327.3 *5*	88 *13*	0.0	5/2$^+$		
2339.1?		338.5 *3*	100	2000.6?	($^+$)		E_γ: from (α,2nγ) only.
2361.85	(19/2$^+$)	345.68 *20*	53 *7*	2016.12	(17/2$^+$)	D	E_γ: weighted average of 345.8 *5* from (^{14}N,α3nγ) and 345.66 *20* from (α,2nγ). Other: 345.8 from (^{7}Li,6nγ). I_γ: weighted average of 38 *8* from (^{14}N,α3nγ), 67 *13* from (α,2nγ), and 57 *5* from (^{7}Li,6nγ). Mult.: D (ΔJ=1) from γγ(ADO) in (^{14}N,α3nγ), supported by γ(θ) in (α,2nγ).

$^{123}_{53}I_{70}$-18

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
2361.85	(19/2$^+$)	671.5 *2*	100 *11*	1690.39	15/2$^+$	(E2)	0.00390	α(K)=0.00335 *5*; α(L)=0.000449 *7*; α(M)=9.05×10^{-5} *13* α(N)=1.82×10^{-5} *3*; α(O)=2.08×10^{-6} *3* E_γ: weighted average of 671.8 *5* from (^{14}N,α3nγ), 671.2 *3* from (^{6}Li,3nγ), and 671.6 *2* from (α,2nγ). Other: 671.4 from (^{7}Li,6nγ). I_γ: from (^{7}Li,6nγ). Others: 100 *15* form (^{14}N,α3nγ), 100 *20* from (α,2nγ). Mult.: from γγ(ADO) (ΔJ=2) in (^{14}N,α3nγ), γ(θ) in (α,2nγ) and (^{6}Li,3nγ); M1,E2 from ce data in (α,2nγ) for a doublet.
2367.81	(1/2$^+$,3/2$^+$)	2037.6 *4*	100 *12*	330.30	3/2$^+$			
		2189.8 *4*	8 *2*	178.04	3/2$^+$			
		2218.8 *4*	14 *2*	148.94	1/2$^+$			
		2367.6 *5*	4 *1*	0.0	5/2$^+$			
2369.47		329.8 *2*	100	2039.67	19/2$^-$			E_γ: from (α,2nγ) only.
2389.4	(3/2)$^+$	2058.9 *4*	100 *13*	330.30	3/2$^+$			
		2211.7 *4*	53 *13*	178.04	3/2$^+$			
		2389.1 *5*	7 *2*	0.0	5/2$^+$			
2439.9		423.8 *3*	100	2016.12	(17/2$^+$)			E_γ: from (α,2nγ) only.
2455.5	(1/2$^+$)	2125.3[&] *4*	67 *17*	330.30	3/2$^+$			
		2277.0[&] *5*	50 *13*	178.04	3/2$^+$			
		2306.5[&] *5*	67 *17*	148.94	1/2$^+$			
		2455.5[&] *5*	100 *17*	0.0	5/2$^+$			
2466.40	19/2$^{(+)}$	595.4 *4*	16.5 *8*	1871.25	17/2$^+$			E_γ: weighted average of 595.3 *4* from (^{48}Ca,p4nγ) and 596.0 *10* from (^{14}N,α3nγ). I_γ: from (^{48}Ca,p4nγ). Other: <14.3 from (^{14}N,α3nγ).
		889.7 *2*	100 *6*	1576.58	15/2$^{(+)}$	Q		E_γ: weighted average of 889.7 *2* from (^{48}Ca,p4nγ), 889.8 *5* from (^{14}N,α3nγ), and 889.6 *2* from (α,2nγ). I_γ: from (^{48}Ca,p4nγ). Other: 100 *14* from (^{14}N,α3nγ). Mult.: ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ), supported by γ(θ) in (α,2nγ).
2481.6?		399.5 *3*	100	2082.06	17/2$^{(+)}$			E_γ: from (α,2nγ) only.
2500.9	19/2$^{(+)}$	418.9 *3*	100 *11*	2082.06	17/2$^{(+)}$	D	0.0152 *9*	E_γ: weighted average of 418.8 *5* from (^{14}N,α3nγ) and 419.0 *3* from (α,2nγ). I_γ: from (^{14}N,α3nγ). Other: 100 *20* from (α,2nγ). Mult.: ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ).
		810.5 *3*	58 *10*	1690.39	15/2$^+$	Q		E_γ: weighted average of 810.5 *5* from (^{14}N,α3nγ) and 810.5 *3* from (α,2nγ). I_γ: weighted average of 67 *11* from (^{14}N,α3nγ) and 50 *10* from (α,2nγ). Mult.: ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ).
2560.3?	(1/2$^+$,3/2)	2411.3[&] *5*	33 *10*	148.94	1/2$^+$			
		2560.4[&] *5*	100 *17*	0.0	5/2$^+$			

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
2567.3		696.0 *3*	75 *15*	1871.25	17/2$^+$			E_γ: from (α,2nγ) only.
		990.7 *3*	100 *20*	1576.58	15/2$^{(+)}$			E_γ: from (α,2nγ) only.
2580.0?	(1/2$^+$,3/2,5/2$^+$)	2430.8[&] *5*	100 *30*	148.94	1/2$^+$			
		2580.3[&] *5*	100 *30*	0.0	5/2$^+$			
2613.69	23/2$^-$	574.08 *20*	100	2039.67	19/2$^-$	E2	0.00587	α(K)=0.00500 *7*; α(L)=0.000692 *10*; α(M)=0.0001398 *20* α(N)=2.81×10^{-5} *4*; α(O)=3.18×10^{-6} *5* E_γ: weighted average of 574.1 *2* from (^{48}Ca,p4nγ), 574.0 *2* from (^{18}O,p4nγ), 574.3 *5* from (^{14}N,α3nγ), 574.1 *3* from (^{6}Li,3nγ), and 574.08 *20* from (α,2nγ). Mult.: from ce an γ(θ) data in (α,2nγ), ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ), γγ(DCO) in (^{18}O,p4nγ), and angular intensity ratio in (^{48}Ca,p4nγ).
2648.0	(19/2$^+$)	856.5 *2*	100	1791.4	(15/2$^+$)	Q		E_γ: weighted average of 856.8 *4* from (^{48}Ca,p4nγ), 856.8 *5* from (^{14}N,α3nγ), and 856.3 *2* from (α,2nγ). Mult.: from γγ(ADO) in (^{14}N,α3nγ) and γ(θ) in (α,2nγ).
2659.9	(21/2$^+$)	298.07 *20*	100	2361.85	(19/2$^+$)	(M1)	0.0380	B(M1)(W.u.)=3.01×10^{-5} *+25−22* α(K)=0.0328 *5*; α(L)=0.00417 *6*; α(M)=0.000839 *12* α(N)=0.0001699 *24*; α(O)=2.00×10^{-5} *3* E_γ: weighted average of 297.8 *5* from (^{14}N,α3nγ), 298.2 *3* from (^{6}Li,3nγ), and 298.06 *20* from (α,2nγ). Other: 298.2 from (^{7}Li,6nγ). Mult.: (M1,E2) from ce and γ(θ) data in (α,2nγ), D (ΔJ=1) from γγ(ADO) in (^{14}N,α3nγ).
2672?		310[&]		2361.85	(19/2$^+$)			E_γ: from (^{7}Li,6nγ) only, probably corresponds to 310.17γ from 2001 level seen in (α,2nγ). This γ is not seen in other studies.
2711.92	21/2$^{(+)}$	245.4 *4*	8.5 *4*	2466.40	19/2$^{(+)}$	D		E_γ: weighted average of 245.4 *4* from (^{48}Ca,p4nγ) and 245.5 *10* from (^{14}N,α3nγ). I_γ: other: <5.3 from (^{14}N,α3nγ). Mult.: ΔJ=1 from angular intensity ratio in (^{48}Ca,p4nγ).
		840.7 *2*	100 *6*	1871.25	17/2$^+$	Q		E_γ: weighted average of 840.7 *2* from (^{48}Ca,p4nγ), 840.8 *5* from (^{14}N,α3nγ), 840.6 *3* from (^{6}Li,3nγ), and 840.6 *2* from (α,2nγ). I_γ: other: 100 *8* from (^{14}N,α3nγ). Mult.: ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ), supported by γ(θ) in (α,2nγ) and (^{6}Li,3nγ).
2790.3		919.0 *3*	100	1871.25	17/2$^+$			E_γ: from (α,2nγ) only.
2876.5	(21/2$^+$)	1005.3 *4*	100	1871.25	17/2$^+$	Q		
2936.8	21/2$^{(+)}$	435.8 *5*	100 *14*	2500.9	19/2$^{(+)}$	D		E_γ,I_γ,Mult.: from (^{14}N,α3nγ), with Mult (ΔJ=1) from γγ(ADO).
		854.8 *5*	86 *14*	2082.06	17/2$^{(+)}$	Q		E_γ,I_γ,Mult.: from (^{14}N,α3nγ), with Mult (ΔJ=2) from γγ(ADO).
2947.7?	(21/2$^-$)	908.0 *3*	100	2039.67	19/2$^-$	(D+Q)		E_γ,Mult.: from (α,2nγ) only, with Mult from γ(θ).
3037?		377[&]		2659.9	(21/2$^+$)			E_γ: from (^{7}Li,6nγ) only.

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	Comments
3071?		399[&]		2672?			E_γ: from (^{7}Li,6nγ) only, probably corresponds to 399.5γ from 2482 level seen in (α,2nγ). This γ is not seen in other studies.
3083.82	23/2$^{(+)}$	371.9 *3*	60 *3*	2711.92	21/2$^{(+)}$	D	E_γ: weighted average of 372.0 *2* from (^{48}Ca,p4nγ) and 371.3 *5* from (^{14}N,α3nγ). I_γ: weighted average of 60 *3* from (^{48}Ca,p4nγ) and 63 *13* from (^{14}N,α3nγ). Mult.: ΔJ=1 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ).
		617.4 *2*	100 *5*	2466.40	19/2$^{(+)}$	Q	E_γ: weighted average of 617.4 *2* from (^{48}Ca,p4nγ) and 617.3 *5* from (^{14}N,α3nγ). I_γ: other: 100 *13* from (^{14}N,α3nγ). Mult.: ΔJ=2 from γγ(ADO) in (^{14}N,α3nγ) and angular intensity ratio in (^{48}Ca,p4nγ).
3200.3	(23/2$^+$)	323.9 *4*	55 *4*	2876.5	(21/2$^+$)	D	
		488.5 *4*	100 *6*	2711.92	21/2$^{(+)}$	D	
		551.8 *6*	40 *4*	2648.0	(19/2$^+$)		
		735[&]		2466.40	19/2$^{(+)}$		E_γ: from (^{14}N,α3nγ) only.
3324.21	(25/2$^+$)	123.8 *4*	6.8 *5*	3200.3	(23/2$^+$)	D	
		240.5 *4*	8.8 *5*	3083.82	23/2$^{(+)}$		E_γ: weighted average of 240.3 *4* from (^{48}Ca,p4nγ) and 240.8 *5* from (^{14}N,α3nγ). I_γ: other: 25 *5* from (^{14}N,α3nγ).
		612.3 *2*	100 *5*	2711.92	21/2$^{(+)}$	Q	E_γ: weighted average of 612.3 *2* from (^{48}Ca,p4nγ) and 612.3 *5* from (^{14}N,α3nγ). I_γ: other: 100 *10* from (^{14}N,α3nγ). Mult.: from angular intensity ratio in (^{48}Ca,p4nγ) and γγ(ADO) in (^{14}N,α3nγ).
3337.3	23/2$^+$	689.3 *4*	100	2648.0	(19/2$^+$)		E_γ: weighted average of 689.3 *4* from (^{48}Ca,p4nγ) and 689.3 *10* from (^{14}N,α3nγ).
3393.2	23/2$^{(+)}$	456.3 *5*	100 *17*	2936.8	21/2$^{(+)}$	D	E_γ,I_γ,Mult.: from (^{14}N,α3nγ), with Mult (ΔJ=1) from γγ(ADO).
		892.3 *5*	67 *17*	2500.9	19/2$^{(+)}$	Q	E_γ,I_γ,Mult.: from (^{14}N,α3nγ), with Mult (ΔJ=2) from γγ(ADO).
3409?		943[&] *1*	100	2466.40	19/2$^{(+)}$		E_γ: from (α,2nγ) only.
3460.9?		424[&]		3037?			E_γ: from (^{7}Li,6nγ) only.
3490.8	(25/2$^+$)	290.5 *4*	96 *5*	3200.3	(23/2$^+$)	D	
		407.0 *4*	78 *3*	3083.82	23/2$^{(+)}$	D	
		614.4 *4*	100 *7*	2876.5	(21/2$^+$)		
		778		2711.92	21/2$^{(+)}$		E_γ: from (^{14}N,α3nγ) only.
3512.0	(27/2$^-$)	898.4 *2*	100	2613.69	23/2$^-$	Q	E_γ: weighted average of 898.3 *2* from (^{48}Ca,p4nγ), 898.5 *2* from (^{18}O,p4nγ), 898.3 *5* from (^{14}N,α3nγ), 898.3 *3* from (^{6}Li,3nγ), and 898.5 *3* from (α,2nγ). Mult.: ΔJ=2 from angular intensity ratio in (^{48}Ca,p4nγ), γγ(ADO) in (^{14}N,α3nγ), γγ(DCO) in (^{18}O,p4nγ), γ(θ) in (α,2nγ) and (^{6}Li,3nγ).
3688		976		2711.92	21/2$^{(+)}$		E_γ: from (^{14}N,α3nγ) only.
3697?		985[&] *1*	100	2711.92	21/2$^{(+)}$		E_γ: from (α,2nγ) only.
3716.6	(27/2$^+$)	225.7 *4*	35 *2*	3490.8	(25/2$^+$)	D	E_γ: other: 226 from (^{14}N,α3nγ).
		392.4 *2*	100 *5*	3324.21	(25/2$^+$)	D	E_γ: other: 392.0 *10* from (^{14}N,α3nγ).
		632.7 *4*	67 *3*	3083.82	23/2$^{(+)}$	Q	E_γ: other: 632.8 *5* from (^{14}N,α3nγ). Mult.: ΔJ=2 from angular intensity ratio in (^{48}Ca,p4nγ) and γγ(ADO) in (^{14}N,α3nγ).
3861.9	(25/2$^+$)	468.6 *5*	100 *25*	3393.2	23/2$^{(+)}$	D	E_γ,I_γ,Mult.: from (^{14}N,α3nγ), with Mult (ΔJ=1) from γγ(ADO).
		925.3 *10*	<75	2936.8	21/2$^{(+)}$		E_γ,I_γ,Mult.: from (^{14}N,α3nγ).
3904.6	(27/2$^+$)	413.8 *6*	24.6 *24*	3490.8	(25/2$^+$)	D	E_γ: other: 413 from (^{14}N,α3nγ).

$^{123}_{53}I_{70}$-21

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	Comments
3904.6	(27/2$^+$)	580.5 *4*	71 *5*	3324.21	(25/2$^+$)		E_γ: other: 579 from (^{14}N,α3nγ).
		704.3 *4*	100 *6*	3200.3	(23/2$^+$)	Q	E_γ: other: 704 from (^{14}N,α3nγ).
		820		3083.82	23/2$^{(+)}$		E_γ: from (^{14}N,α3nγ) only.
3916.9?		456[&]		3460.9?			E_γ: from (^{7}Li,6nγ) only.
4054.8	(29/2$^+$)	338.2 *4*	16.8 *9*	3716.6	(27/2$^+$)	D	
		730.6 *2*	100 *5*	3324.21	(25/2$^+$)	Q	E_γ: other: 730.8 *5* from (^{14}N,α3nγ).
4250.9	(29/2$^+$)	346.3 *4*	64 *3*	3904.6	(27/2$^+$)	D	E_γ: other: 347 from (^{14}N,α3nγ).
		534.4 *4*	100 *5*	3716.6	(27/2$^+$)		E_γ: other: 534 from (^{14}N,α3nγ).
		760.1 *4*	54 *3*	3490.8	(25/2$^+$)		E_γ: other: 760 from (^{14}N,α3nγ).
4326.3	(31/2$^-$)	814.3 *2*	100	3512.0	(27/2$^-$)	Q	E_γ: weighted average of 814.1 *2* from (^{48}Ca,p4nγ), 814.5 *2* from (^{18}O,p4nγ), and 814.5 *5* from (^{14}N,α3nγ). Mult.: ΔJ=2 from angular intensity ratio in (^{48}Ca,p4nγ), γγ(DCO) in (^{18}O,p4nγ), and γγ(ADO) in (^{14}N,α3nγ).
4542.4	(31/2$^+$)	487.6 *4*	48.4 *23*	4054.8	(29/2$^+$)		
		825.8 *2*	100 *6*	3716.6	(27/2$^+$)	Q	E_γ: other: 825.8 *5* from (^{14}N,α3nγ).
4606.2?		918[&]		3688			E_γ: from (^{14}N,α3nγ) only.
4700.6	(31/2$^+$)	796.0 *4*	100	3904.6	(27/2$^+$)	Q	E_γ: other: 796 from (^{14}N,α3nγ).
4901.2	(33/2$^+$)	358.7 *6*	9 *5*	4542.4	(31/2$^+$)	D	
		846.3 *2*	100 *5*	4054.8	(29/2$^+$)	Q	E_γ: other: 846.3 *5* from (^{14}N,α3nγ).
5000.8	(35/2$^-$)	674.6 *2*	100	4326.3	(31/2$^-$)	Q	E_γ: weighted average of 674.5 *2* from (^{48}Ca,p4nγ), 674.6 *2* from (^{18}O,p4nγ), and 674.5 *5* from (^{14}N,α3nγ). Mult.: ΔJ=2 from angular intensity ratio in (^{48}Ca,p4nγ), γγ(DCO) in (^{18}O,p4nγ), and γγ(ADO) in (^{14}N,α3nγ).
5488.7	(35/2$^+$)	946.2 *4*	100	4542.4	(31/2$^+$)		
5591.7	(39/2$^-$)	590.9 *2*	100	5000.8	(35/2$^-$)	Q	E_γ: weighted average of 590.8 *2* from (^{48}Ca,p4nγ), 590.9 *2* from (^{18}O,p4nγ), and 590.8 *5* from (^{14}N,α3nγ). Mult.: ΔJ=2 from angular intensity ratio in (^{48}Ca,p4nγ), γγ(DCO) in (^{18}O,p4nγ), and γγ(ADO) in (^{14}N,α3nγ).
5818.5	(37/2$^+$)	329.8 *4*	16.8 *9*	5488.7	(35/2$^+$)	D	
		917.3 *2*	100 *5*	4901.2	(33/2$^+$)	Q	E_γ: other: 917.5 *5* from (^{14}N,α3nγ).
5945.1	(37/2$^+$)	456.3 *4*	76 *4*	5488.7	(35/2$^+$)		
		1043.8 *4*	100 *5*	4901.2	(33/2$^+$)	Q	E_γ: other: 1044.0 *10* placed from a level at 6863 in (^{14}N,α3nγ), which is replaced by the placement here adopted from (^{48}Ca,p4nγ).
6423.6	(41/2$^-$)	831.9 *2*	100	5591.7	(39/2$^-$)	D	E_γ: weighted average of 831.6 *2* from (^{48}Ca,p4nγ), 832.1 *2* from (^{18}O,p4nγ), and 831.8 *5* from (^{14}N,α3nγ). Mult.: ΔJ=1 from angular intensity ratio in (^{48}Ca,p4nγ) and γγ(ADO) in (^{14}N,α3nγ).
6651.4	(41/2$^+$)	706.2 *4*	100	5945.1	(37/2$^+$)	Q	
6776.5	(43/2$^-$)	352.9 *2*	101 *5*	6423.6	(41/2$^-$)	(D+Q)	E_γ: weighted average of 353.1 *2* from (^{48}Ca,p4nγ), 352.7 *2* from (^{18}O,p4nγ), and 352.8 *5* from (^{14}N,α3nγ). I_γ: weighted average of 93 *5* from (^{48}Ca,p4nγ), 110 *5* from (^{18}O,p4nγ), and 80 *30* from (^{14}N,α3nγ). All intensities are normalized to I(1184.9γ)=100. Mult.: from γγ(DCO) in (^{18}O,p4nγ).

$^{123}_{53}I_{70}$-22

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.‡	α†	Comments
6776.5	(43/2⁻)	1184.9 *2*	100 *4*	5591.7	(39/2⁻)	Q		E_γ: weighted average of 1184.7 *2* from (^{48}Ca,p4nγ), 1185.0 *2* from (^{18}O,p4nγ), and 1184.8 *5* from (^{14}N,α3nγ). I_γ: from (^{48}Ca,p4nγ). Others: 100 *8* from (^{18}O,p4nγ) and 100 *30* from (^{14}N,α3nγ). Mult.: ΔJ=2 from angular intensity ratio in (^{48}Ca,p4nγ), γγ(DCO) in (^{18}O,p4nγ), and γγ(ADO) in (^{14}N,α3nγ).
6785.3?		691.5& *5*	100	6092.9?				E_γ: weak γ from (^{18}O,p4nγ) only. This γ could be the same as 519.5γ (Mult=M1) placed from 8389, (49/2⁺) level in (^{48}Ca,p4nγ) in a 692.2γ-519.5γ cascade, while the cascade in (^{18}O,p4nγ) is 519.5γ-245.8γ-691.5γ to a level at 6092.
6937.4	(41/2⁺)	1118.8 *4*	100	5818.5	(37/2⁺)	Q		
7031.1	(43/2⁻)	245.8 *5*	<25	6785.3?				E_γ,I_γ: weak transition from (^{18}O,p4nγ) only.
		606.6 *9*	100 *13*	6423.6	(41/2⁻)	(D+Q)		E_γ: unweighted average of 608.3 *4* from (^{48}Ca,p4nγ), 605.6 *5* from (^{18}O,p4nγ), and 606.0 *10* from (^{14}N,α3nγ). I_γ,Mult.: from (^{18}O,p4nγ), with Mult from γγ(DCO).
7177.8	(43/2⁺)	240.3 *4*	71 *3*	6937.4	(41/2⁺)			
		526.3 *4*	99 *5*	6651.4	(41/2⁺)			
		754.6 *4*	100 *6*	6423.6	(41/2⁻)	E1	1.13×10^{-3}	α(K)=0.000983 *14*; α(L)=0.0001189 *17*; α(M)=2.38×10^{-5} *4* α(N)=4.80×10^{-6} *7*; α(O)=5.63×10^{-7} *8* E_γ: weighted average of 754.3 *4* from (^{48}Ca,p4nγ), 755.1 *5* from (^{18}O,p4nγ), and 755.0 *10* from (^{14}N,α3nγ).
7549.7?		519.5& *5*	100	7031.1	(43/2⁻)	(D+Q)		E_γ,Mult.: from (^{18}O,p4nγ) only, with Mult from γγ(DCO). This γ could be the same as 519.5γ (Mult=Q) placed from 7697, (47/2⁺) level in (^{48}Ca,p4nγ) in a 692.2γ-519.5γ cascade, while the cascade in (^{18}O,p4nγ) is 519.5γ-245.8γ-691.5γ to a level at 6092.
7635.6	(45/2)	604.0 *6*		7031.1	(43/2⁻)			
		859.2 *4*	100	6776.5	(43/2⁻)	D		
7661.1	(45/2)	884.6 *6*	100	6776.5	(43/2⁻)	D		
7697.3	(47/2⁺)	(61.5)		7635.6	(45/2)			
		519.5 *2*	100	7177.8	(43/2⁺)	Q		E_γ,Mult.: from (^{48}Ca,p4nγ), with Mult (ΔJ=2) from angular intensity ratio. See also 519.5γ from 7550 level, reported in (^{18}O,p4nγ).
7767.0	(47/2⁻)	990.5 *2*	100	6776.5	(43/2⁻)	Q		E_γ,Mult.: from (^{48}Ca,p4nγ), with Mult (ΔJ=2) from angular intensity ratio. Other: Eγ=990.8 *5*, Mult=D from γγ(ADO) in (^{14}N,α3nγ); Eγ=990.8 *5*, Mult=D from γγ(DCO) in (^{18}O,p4nγ) but placed from a 8570 level based on a 991γ-801γ cascade to 6777 level. Note that the order of the cascade is reversed in (^{48}Ca,p4nγ), resulting in the level at 7766, instead of a level at 7579 in (^{18}O,p4nγ), with the former being adopted.
7885.7?		336.0& *5*	100	7549.7?				E_γ: weak γ from (^{18}O,p4nγ) only.
7908.3	(45/2)	877.2 *6*	100	7031.1	(43/2⁻)	D		
8023.8?		474.1& *5*	100	7549.7?		(D)		E_γ,Mult.: from (^{18}O,p4nγ) only, with Mult from γγ(DCO).
8315.0?		291.2& *5*	100	8023.8?				E_γ: weak γ from (^{18}O,p4nγ) only.

$^{123}_{53}I_{70}$-23

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
8389.5	(49/2$^+$)	692.2 *2*	100	7697.3	(47/2$^+$)	M1	0.00466	α(K)=0.00404 *6*; α(L)=0.000500 *7*; α(M)=0.0001002 *14* α(N)=2.03×10^{-5} *3*; α(O)=2.40×10^{-6} *4* E_γ,Mult.: from (^{48}Ca,p4nγ), with Mult (ΔJ=1) from angular intensity ratio and γ(pol). See also 691.5γ from 6784 level, reported in (^{18}O,p4nγ).
8568.2	(49/2$^-$)	801.2 *2*	100	7767.0	(47/2$^-$)	M1	0.00330	α(K)=0.00286 *4*; α(L)=0.000353 *5*; α(M)=7.07×10^{-5} *10* α(N)=1.433×10^{-5} *20*; α(O)=1.693×10^{-6} *24* E_γ,Mult.: from (^{48}Ca,p4nγ), with Mult (ΔJ=1) from angular intensity ratio and γ(pol). Other: Eγ=802.1 *5* with Mult=D from γγ(DCO) in (^{18}O,p4nγ), placed from a level at 7579 based on a 991γ-801γ cascade to 677 level. The order of the cascade is reversed in (^{48}Ca,p4nγ), resulting in the level at 7766, instead of a level at 7579 in (^{18}O,p4nγ).
8985.5?		961.7[&] *5*	100	8023.8?				E_γ: weak γ from (^{18}O,p4nγ) only.
9137.2	(51/2$^+$)	747.7 *2*	100 *5*	8389.5	(49/2$^+$)	D		
		1439.9 *4*	23.9 *22*	7697.3	(47/2$^+$)	Q		
9285.4	(53/2$^+$)	148.2 *2*	100 *6*	9137.2	(51/2$^+$)	D		
		895.9 *4*	83 *6*	8389.5	(49/2$^+$)	Q		
9372.1	(51/2$^-$)	803.8 *2*	100	8568.2	(49/2$^-$)	M1	0.00328	α(K)=0.00284 *4*; α(L)=0.000350 *5*; α(M)=7.02×10^{-5} *10* α(N)=1.423×10^{-5} *20*; α(O)=1.680×10^{-6} *24*
9723.5	(55/2$^-$)	351.4 *2*	76 *4*	9372.1	(51/2$^-$)	Q		
		438.1 *2*	100 *5*	9285.4	(53/2$^+$)	E1	0.00383	α(K)=0.00332 *5*; α(L)=0.000409 *6*; α(M)=8.17×10^{-5} *12* α(N)=1.648×10^{-5} *24*; α(O)=1.91×10^{-6} *3*
10368.9	(57/2$^+$)	1083.5 *4*	100	9285.4	(53/2$^+$)	Q		
10495.5	(55/2$^+$)	1210.1 *4*	100	9285.4	(53/2$^+$)	D		
10670.4	(57/2)	946.9 *4*	100	9723.5	(55/2$^-$)	D		
10754.1	(57/2$^+$)	258.6 *4*	50.6 *19*	10495.5	(55/2$^+$)	D		
		1030.6 *6*	21.5 *19*	9723.5	(55/2$^-$)			
		1468.7 *4*	100 *5*	9285.4	(53/2$^+$)	Q		
10837.3	(59/2$^-$)	1113.8 *4*	100	9723.5	(55/2$^-$)	Q		
11057.6	(57/2)	1334.1 *6*	100	9723.5	(55/2$^-$)	D		
11511.8	(61/2$^+$)	674.5 *6*	5.6 *10*	10837.3	(59/2$^-$)			
		757.7 *2*	100 *4*	10754.1	(57/2$^+$)	Q		
11831.5	(59/2)	1161.1 *4*	100	10670.4	(57/2)	D		
12033.6	(61/2)	1196.3 *6*	100	10837.3	(59/2$^-$)	D		
12313.4	(61/2)	1476.1 *6*	100	10837.3	(59/2$^-$)	D		
12441.0	(61/2)	1603.7 *6*	100	10837.3	(59/2$^-$)	D		
12470.5	(63/2)	958.7 *4*	100	11511.8	(61/2$^+$)	D		
12631.7	(63/2)	598.1 *6*	100	12033.6	(61/2)	D		
12755.9	63/2	1244.1 *6*	100	11511.8	(61/2$^+$)	D		
12772.9	(63/2)	1261.1 *6*	100	11511.8	(61/2$^+$)	D		
12916.7	(63/2)	1404.9 *6*	100	11511.8	(61/2$^+$)	D		
13090.8		1579.0 *6*	100	11511.8	(61/2$^+$)			
13193.7		1681.9 *6*	100	11511.8	(61/2$^+$)			

$^{123}_{53}I_{70}$-24

Adopted Levels, Gammas (continued)

γ(^{123}I) (continued)

E_i(level)	J_i^π	E_γ[‡]	E_f	J_f^π	E_i(level)	J_i^π	E_γ[‡]	E_f	J_f^π
1233.0+x	(59/2$^-$)	1233	0.0+x	(55/2$^-$)	7333.0+z	(81/2$^+$)	1682	5651.0+z	(77/2$^+$)
1240.0+y	(63/2$^+$)	1240	0.0+y	(59/2$^+$)	7352.0+y	(79/2$^+$)	1715	5637.0+y	(75/2$^+$)
1255.0+z	(65/2$^+$)	1255	0.0+z	(61/2$^+$)	8905.1+x	(79/2$^-$)	1756	7149.0+x	(75/2$^-$)
2554.0+x	(63/2$^-$)	1321	1233.0+x	(59/2$^-$)	9138.1+z	(85/2$^+$)	1805	7333.0+z	(81/2$^+$)
2585.0+y	(67/2$^+$)	1345	1240.0+y	(63/2$^+$)	9201.1+y	(83/2$^+$)	1849	7352.0+y	(79/2$^+$)
2618.0+z	(69/2$^+$)	1363	1255.0+z	(65/2$^+$)	10762+x	(83/2$^-$)	1857	8905.1+x	(79/2$^-$)
3976.0+x	(67/2$^-$)	1422	2554.0+x	(63/2$^-$)	11055+z	(89/2$^+$)	1917	9138.1+z	(85/2$^+$)
4048.0+y	(71/2$^+$)	1463	2585.0+y	(67/2$^+$)	11152+y	(87/2$^+$)	1951	9201.1+y	(83/2$^+$)
4080.0+z	(73/2$^+$)	1462	2618.0+z	(69/2$^+$)	12678+x	(87/2$^-$)	1916	10762+x	(83/2$^-$)
5505.0+x	(71/2$^-$)	1529	3976.0+x	(67/2$^-$)	13065+z	(93/2$^+$)	2010	11055+z	(89/2$^+$)
5637.0+y	(75/2$^+$)	1589	4048.0+y	(71/2$^+$)	13212+y	(91/2$^+$)	2060	11152+y	(87/2$^+$)
5651.0+z	(77/2$^+$)	1571	4080.0+z	(73/2$^+$)	14674+x	(91/2$^-$)	1996	12678+x	(87/2$^-$)
7149.0+x	(75/2$^-$)	1644	5505.0+x	(71/2$^-$)	15156+z	(97/2$^+$)	2091	13065+z	(93/2$^+$)

† Additional information 4.

‡ From ^{123}Xe ε decay with Mult from ce data up to 2580 level, and from (^{48}Ca,p4nγ) with Mult (ΔJ=1 for D and ΔJ=2 for Q) from angular intensity ratio (and γ(pol) if available) above 2580 level, unless otherwise noted. Data are also available in (α,2nγ), (^{6}Li,3nγ), (^{14}N,α3nγ) and (^{18}O,p4nγ).

Multiply placed.

@ Multiply placed with intensity suitably divided.

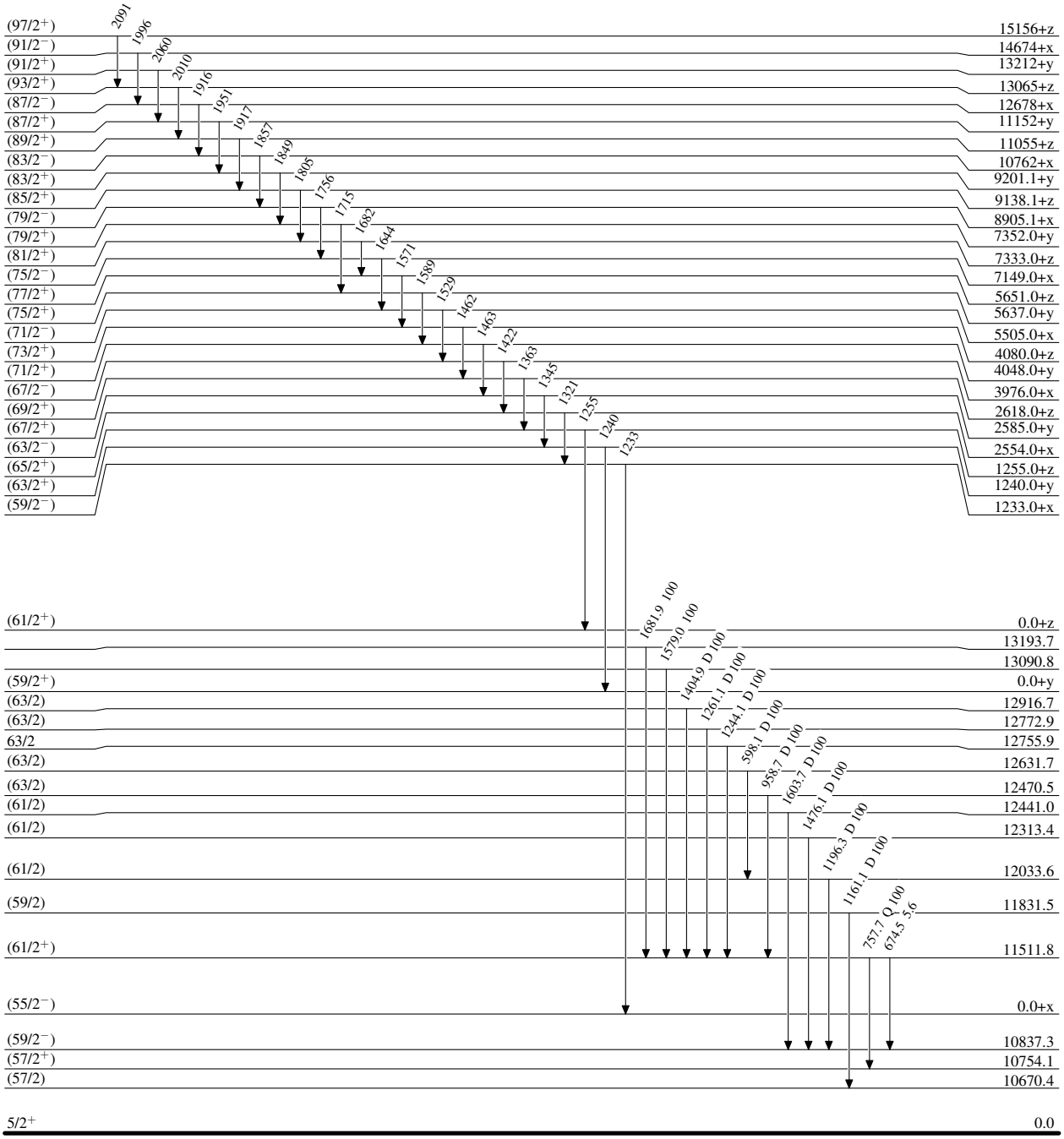
& Placement of transition in the level scheme is uncertain.

$^{123}_{53}I_{70}$-25

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



13.2230 h *19*

$^{123}_{53}I_{70}$

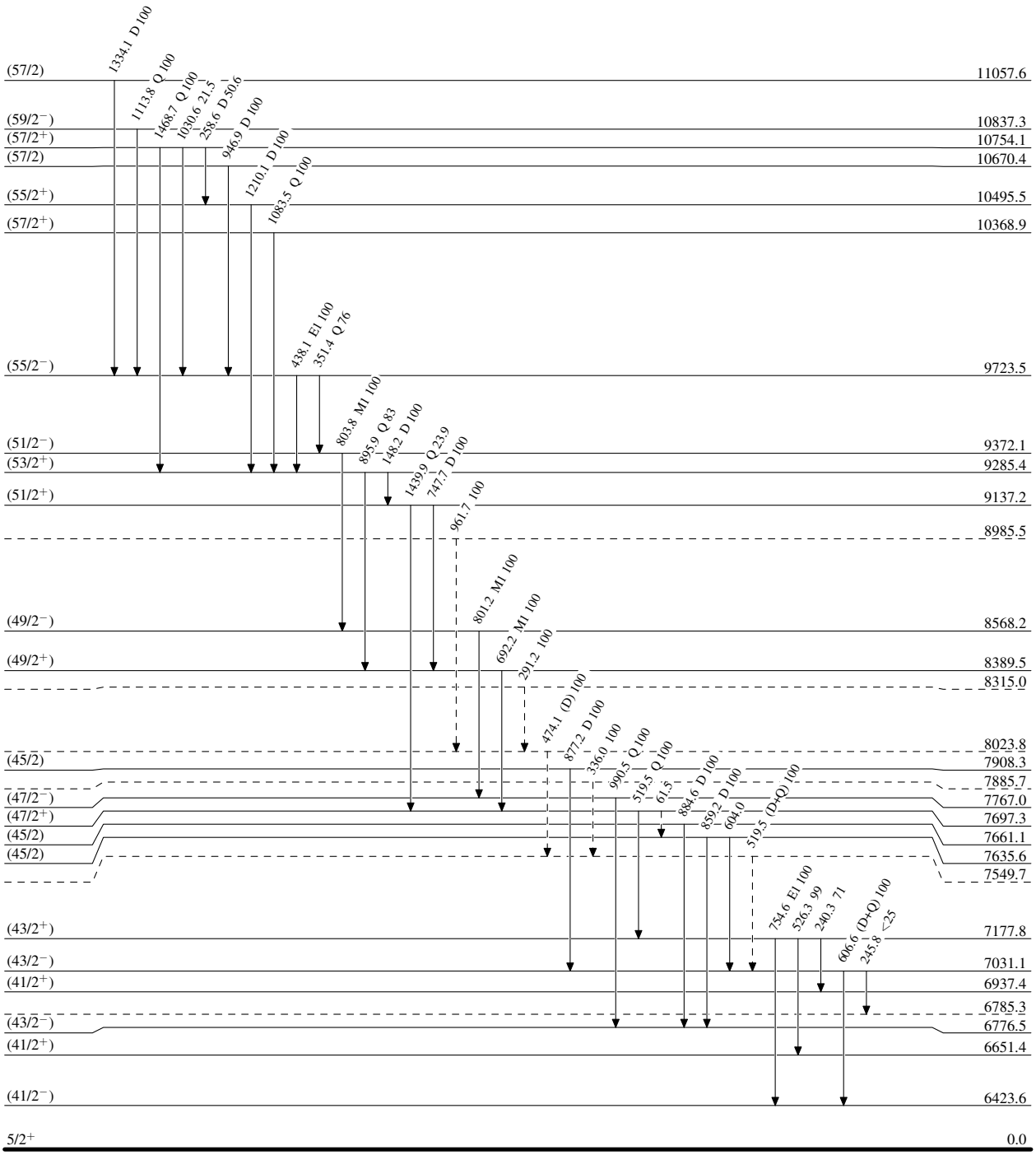
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



13.2230 h *19*

$^{123}_{53}I_{70}$

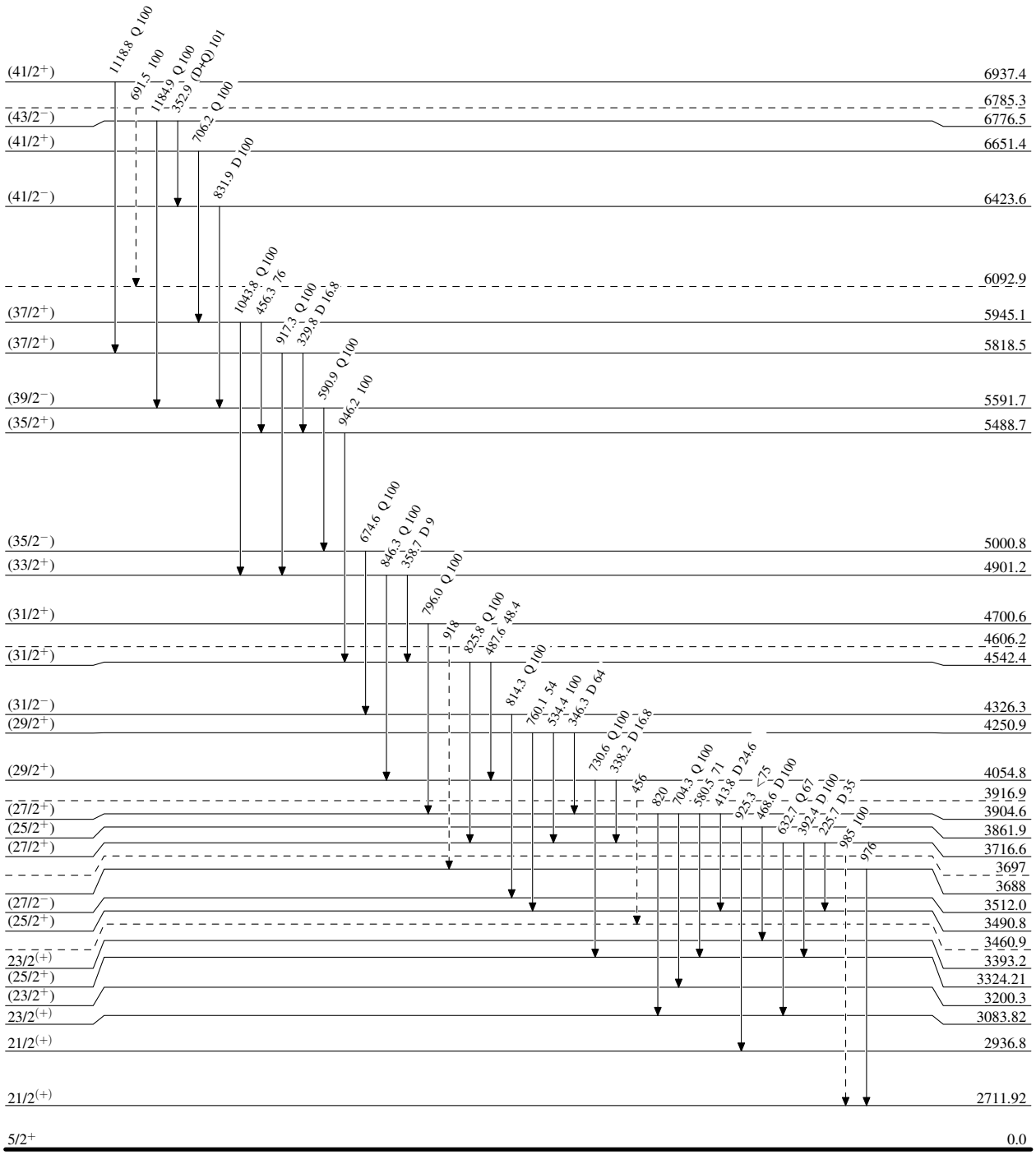
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



13.2230 h *19*

$^{123}_{53}I_{70}$

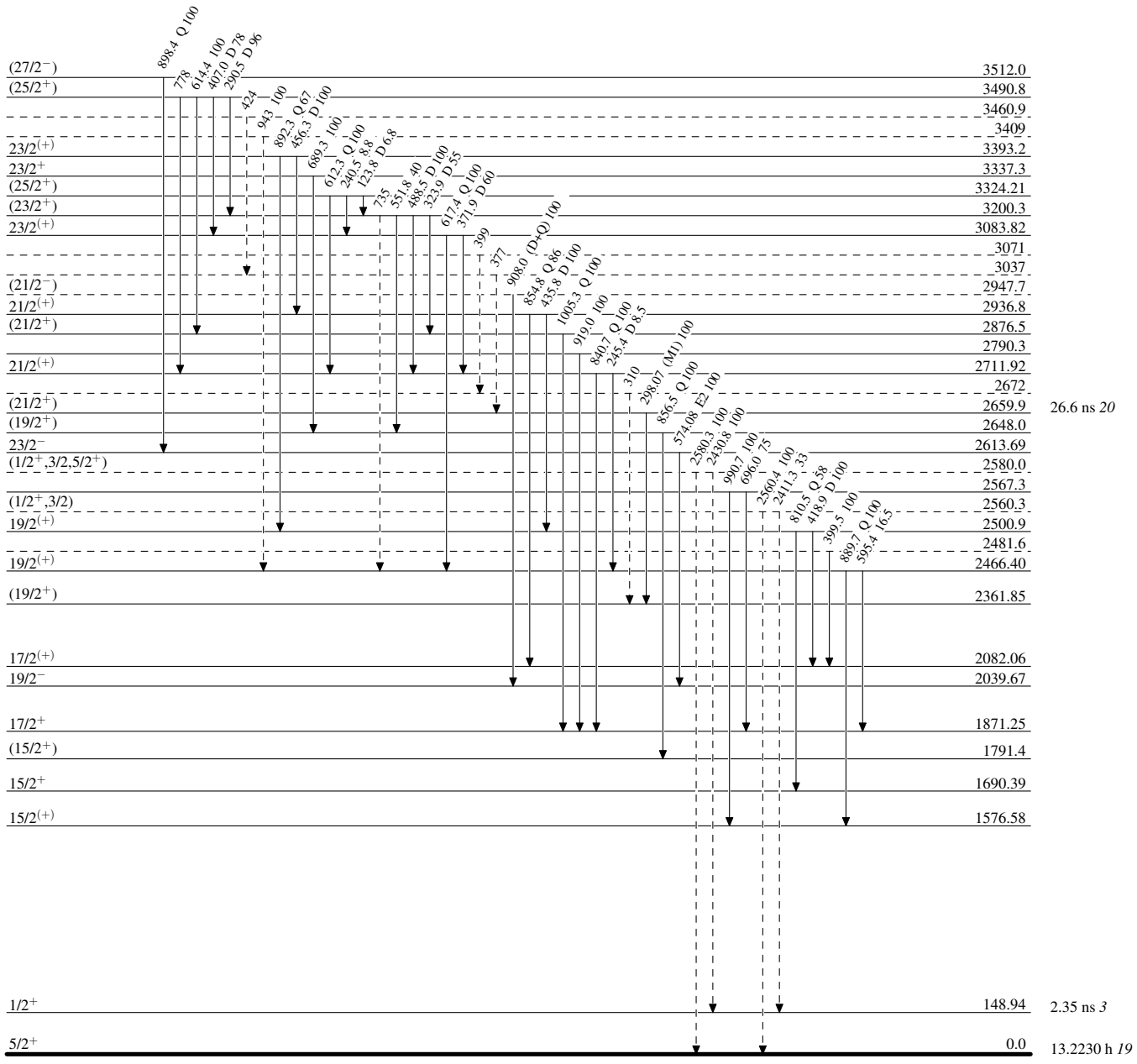
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{123}_{53}I_{70}$

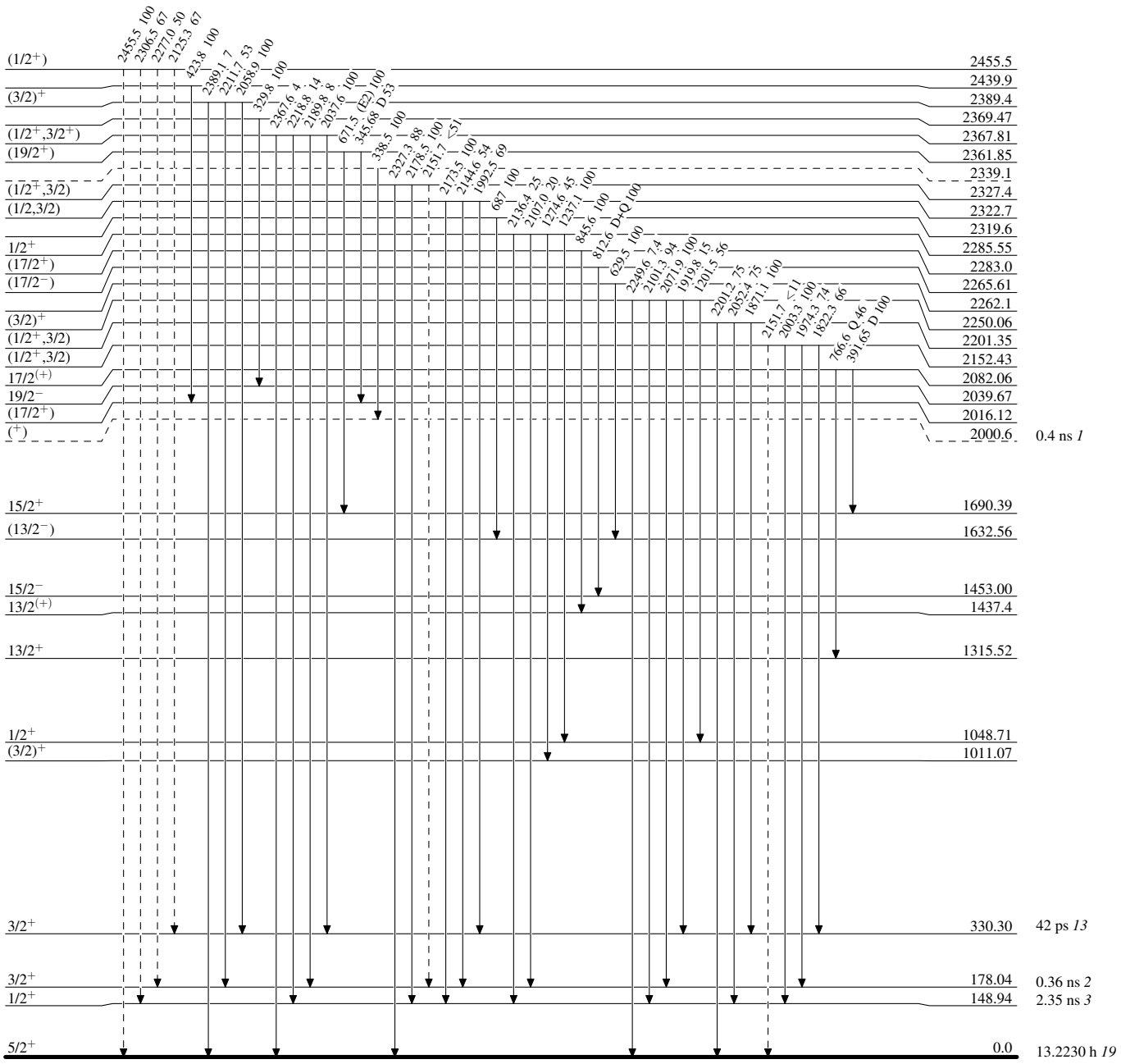
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{123}_{53}I_{70}$

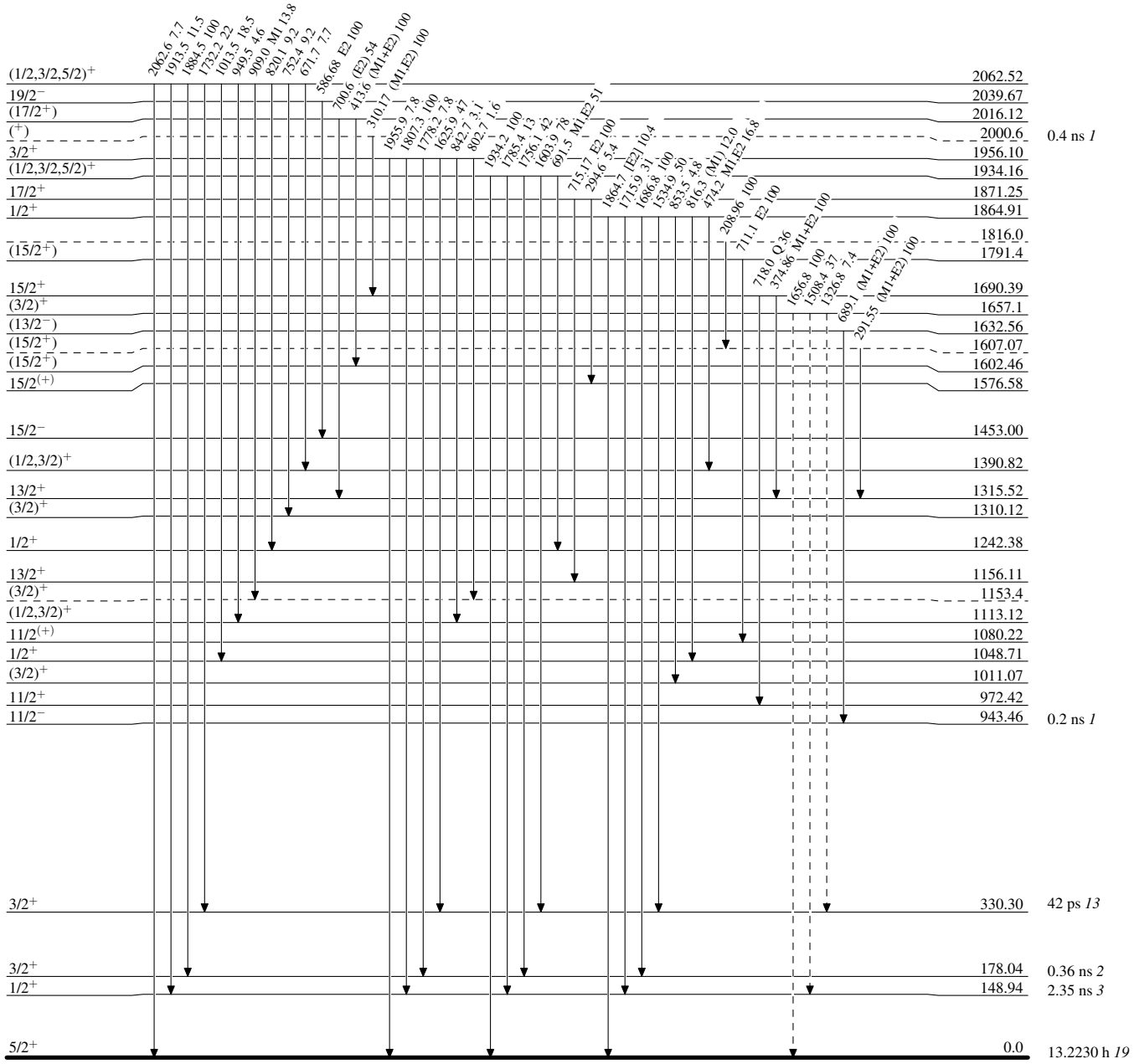
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{123}_{53}I_{70}$

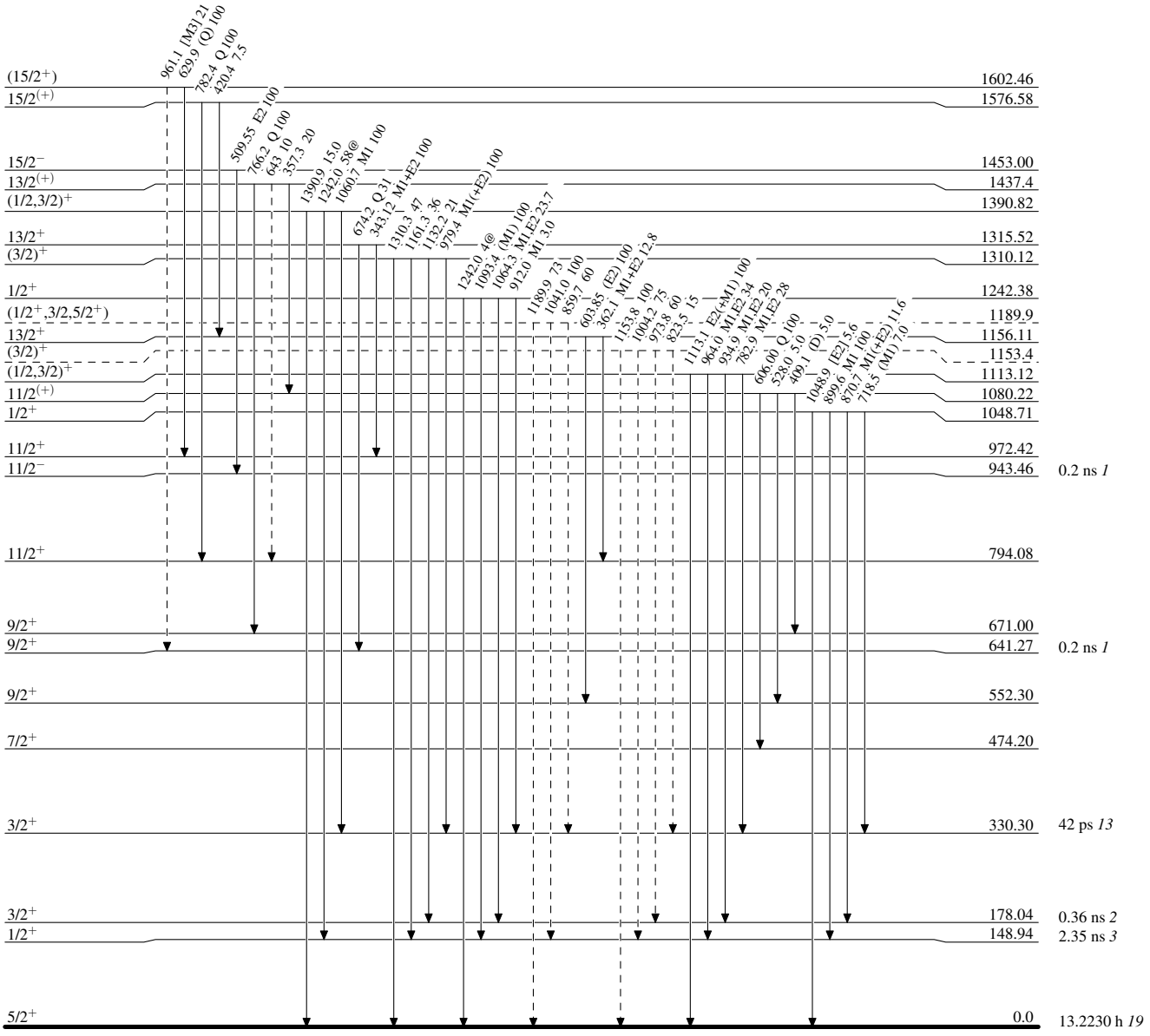
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{123}_{53}I_{70}$

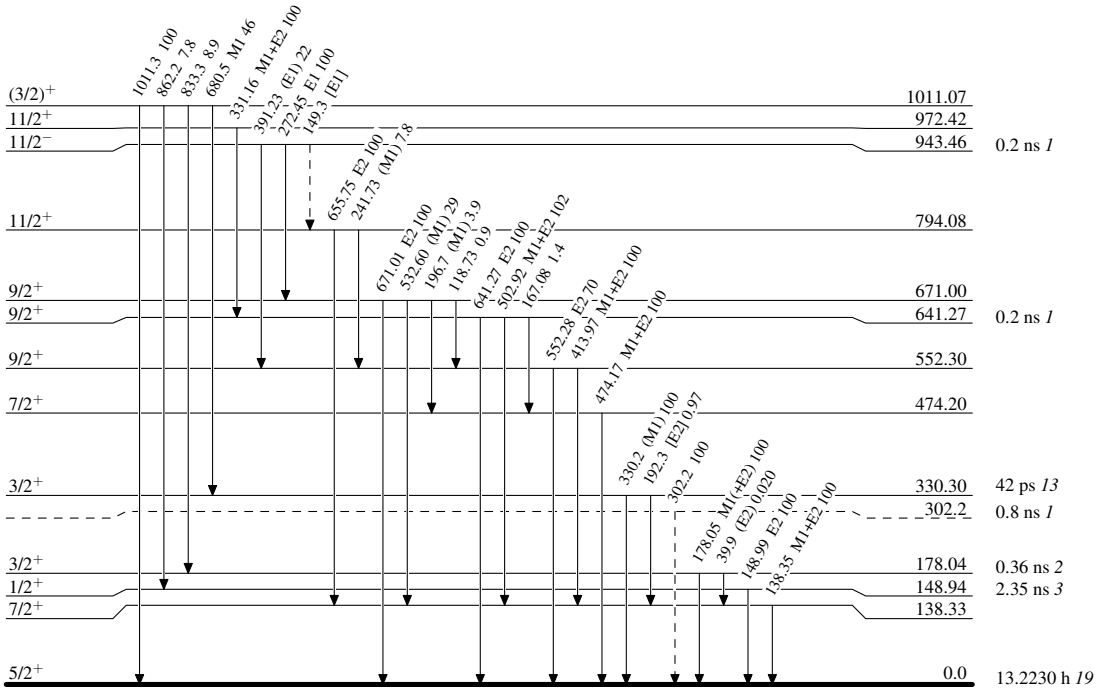
Adopted Levels, Gammas

Legend

Level Scheme (continued)

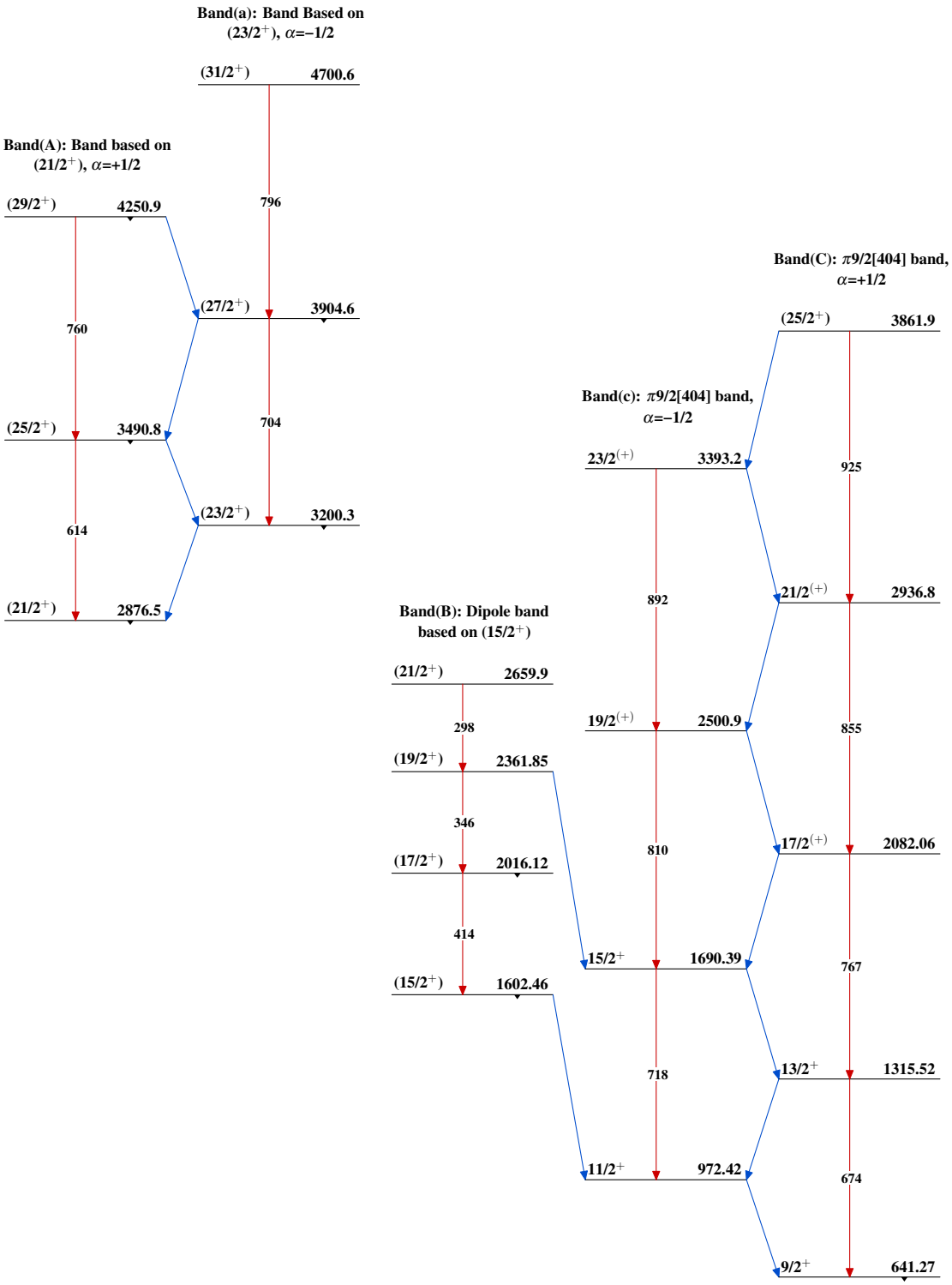
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



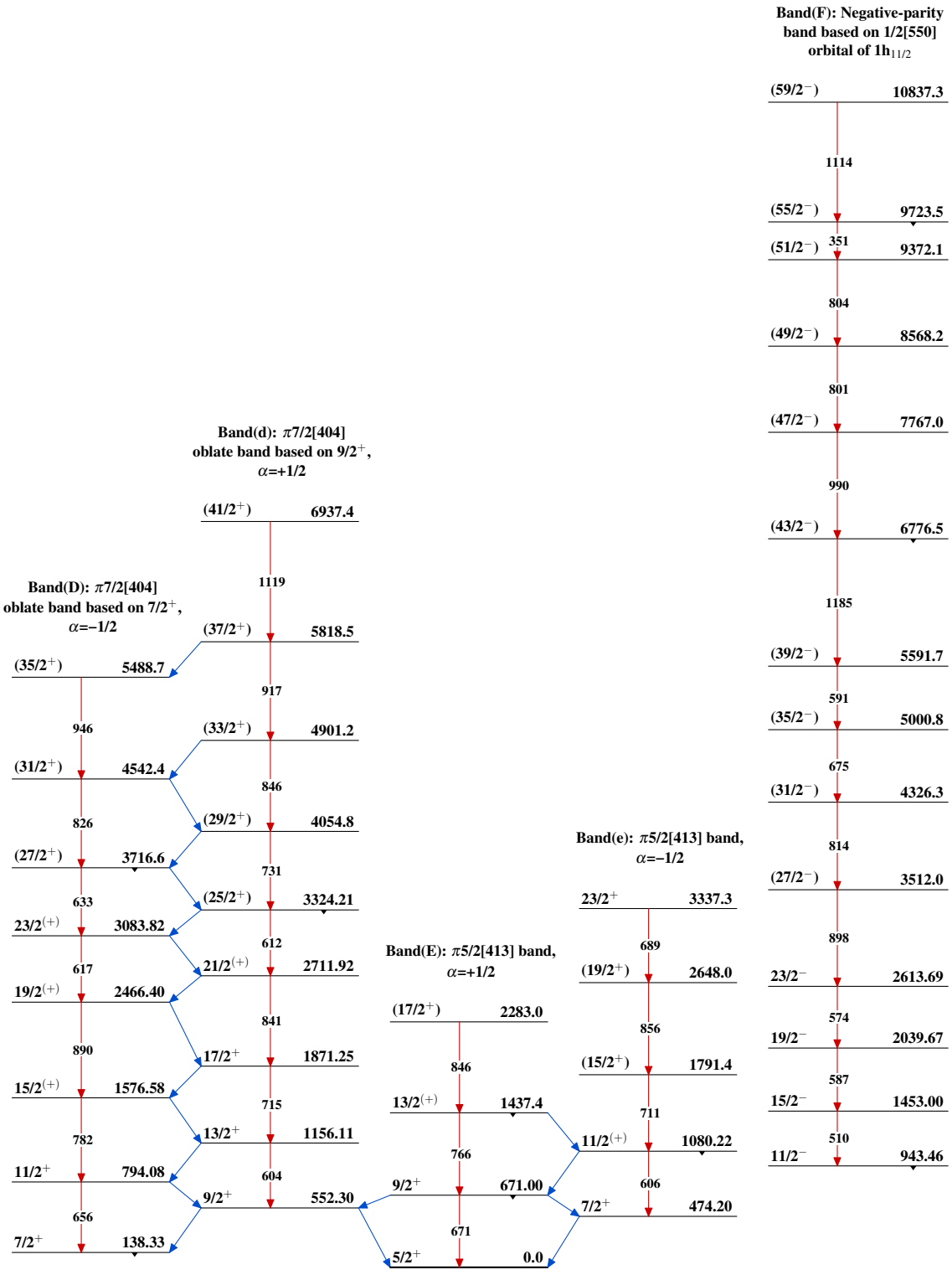
$^{123}_{53}I_{70}$

Adopted Levels, Gammas



$^{123}_{53}I_{70}$

Adopted Levels, Gammas (continued)



$^{123}_{53}I_{70}$

Adopted Levels, Gammas (continued)