

Adopted Levels, Gammas

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

$Q(\beta^-) = -7000$ SY; S(n)=9120 30; S(p)=4800 40; $Q(\alpha) = 715$ 16 2021Wa16

$\Delta Q(\beta^-) = 200$ (syst, 2021Wa16).

S(2n)=21050 140, S(2p)=7752 16, $Q(\epsilon p) = 2411$ 16 (2021Wa16).

Mass measurement: mass excess=-75659 13 (2000Be42, 1997Be63). Other: -75720 100 deduced by 1996Os04 from measured $Q(\epsilon) = 5330$ 100 and known mass excess=-81053 12 for ^{123}Cs .

Additional information 1.

Structure calculations: 2011Bh03, 1991Bu03, 1990Hs01, 1988Re06, 1987Al21, 1982Cu03, 1976Iv02.

 ^{123}Ba Levels

Band assignments are from ($^{19}\text{F}, 3\text{np}\gamma$) (2016Ch30), unless otherwise noted.

Cross Reference (XREF) Flags

- A ^{123}La ϵ decay
 B $^{94}\text{Mo}(^{32}\text{S}, 2\text{pn}\gamma)$, $^{74}\text{Se}(^{52}\text{Cr}, 2\text{pn}\gamma)$
 C $^{108}\text{Cd}(^{19}\text{F}, 3\text{np}\gamma)$
 D $^{114}\text{Sn}(^{12}\text{C}, 3\text{n}\gamma)$

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0.0 ^{&}	5/2 ⁽⁺⁾	2.4 min 4	ABCD	$\% \epsilon + \% \beta^+ = 100$ $\mu = -0.680$ 1; $Q = +1.49$ 12 Configuration=5/2 ⁺ [402]. J^π : spin from laser spectroscopy on atomic beam (1983Mu12); parity from systematics of magnetic moment in Te and Xe isotopes. T _{1/2} : weighted average of 2.7 min 4 (1975Ar31) and 2.0 min 5 (1962Pr09). μ, Q : from laser spectroscopy on atomic beam; value relative to $^{135,137}\text{Ba}$ (1988We14). Other: $\mu = -0.687$ 18, $Q = 1.52$ 13, from 1983Mu12 using laser spectroscopy, relative to ^{138}Ba . See also 2014StZZ and 2016St14 compilations. Isotope shift=603 MHz 9 relative to ^{138}Ba (1983Mu12). Nuclear rms charge radius=4.8135 fm 55 (2013An02). Configuration=7/2 ⁻ [523]. J^π : 92.7 γ $\Delta J = 1$, D to 5/2 ⁽⁺⁾ ; band assignment. T _{1/2} : from $\gamma(t)$ in ($^{12}\text{C}, 3\text{n}\gamma$).
92.68 ^a 10	(7/2 ⁻)	≈40 ns	ABCD	$\% \text{IT} = 100$ Configuration=1/2 ⁺ [411]. J^π : systematics of K=1/2 ⁺ band in odd-A Ba isotope. T _{1/2} : from $\beta\gamma(t)$ in ^{123}La ϵ decay (1991Ii02). J^π : 153.6 γ $\Delta J = 1$, M1 to 5/2 ⁽⁺⁾ ; band assignment.
120.98 [‡] 23	(1/2 ⁺)	0.83 μs 6	A C	J^π : 169.0 γ $\Delta J = 1$, D to 5/2 ⁽⁺⁾ ; band assignment.
153.74 [#] 17	(3/2 ⁺)		A C	J^π : 110.0 γ (D+Q) to (7/2 ⁻); band assignment.
169.00 [@] 13	(7/2 ⁺)		ABCD	J^π : 207.0 γ $\Delta J = 2$, Q to (1/2 ⁺); band assignment.
202.63 ^b 13	(9/2 ⁻)		ABCD	J^π : 243.1 γ $\Delta J = 2$, Q to (7/2 ⁻); band assignment.
328.06 [‡] 16	(5/2 ⁺)		A C	J^π : 205.2 γ (D+Q) to (7/2 ⁺); band assignment.
335.76 ^a 17	(11/2 ⁻)		ABCD	J^π : 243.6 γ M1, E2 to (3/2 ⁺), 228.5 γ to (7/2 ⁺); band assignment.
374.23 ^{&} 17	(9/2 ⁺)		ABCD	J^π : (9/2 ⁺) proposed by 1991Ii02 in ^{123}La ϵ decay.
397.48 [#] 15	(7/2 ⁺)		A C	
460.9 4			A	
482.30 23			A	
564.50 24			A	

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Adopted Levels, Gammas (continued) ^{123}Ba Levels (continued)

E(level) [†]	J ^π	XREF	Comments
582.57 ^b 18	(13/2 ⁻)	ABCD	J ^π : 246.8γ (D+Q) to (11/2 ⁻); band assignment.
612.15 [@] 19	(11/2 ⁺)	ABCD	J ^π : 443.1γ ΔJ=2, Q to (7/2 ⁺), 238.0γ (D+Q) to (9/2 ⁺); band assignment.
695.28 [‡] 22	(9/2 ⁺)	A C	J ^π : 297.8γ to (7/2 ⁺); band assignment.
721.42 21	(7/2 ⁻ , 9/2, 11/2 ⁻)	A	J ^π : 628.6γ to (7/2 ⁻), 385.8γ to (11/2 ⁻).
756.75 ^a 22	(15/2 ⁻)	BCD	J ^π : 421.3γ ΔJ=2, Q to (11/2 ⁻), 174.2γ (D+Q) to (13/2 ⁻); band assignment.
790.86 [#] 24	(11/2 ⁺)	A C	J ^π : 393.3γ ΔJ=2, Q to (7/2 ⁺); band assignment.
799.45 24		A	
877.70 ^{&} 22	(13/2 ⁺)	BC	J ^π : 503.4γ ΔJ=2, Q to (9/2 ⁺), 265.7γ to (11/2 ⁺); band assignment.
1091.0 3		A	
1136.73 ^b 23	(17/2 ⁻)	BCD	J ^π : 554.2γ (Q) to (13/2 ⁻), 380.0γ to (15/2 ⁻); band assignment.
1171.90 [@] 22	(15/2 ⁺)	BC	J ^π : 589.4γ ΔJ=2, Q to (11/2 ⁺), 294.1γ to (13/2 ⁺); band assignment.
1308.5 [#] 3	(15/2 ⁺)	C	J ^π : 517.6γ ΔJ=2, Q to (11/2 ⁺); band assignment.
1325.63 ^a 25	(19/2 ⁻)	BCD	J ^π : 568.9γ ΔJ=2, Q to (15/2 ⁻), 188.9γ to (17/2 ⁻); band assignment.
1480.94 ^{&} 24	(17/2 ⁺)	BC	J ^π : 603.2γ ΔJ=2, Q to (13/2 ⁺), 309.1γ to (15/2 ⁺); band assignment.
1818.4 [@] 3	(19/2 ⁺)	BC	J ^π : 646.5γ ΔJ=2, Q to (15/2 ⁺), 337.4γ to (17/2 ⁺); band assignment.
1830.1 ^b 4	(21/2 ⁻)	BCD	J ^π : 694.7γ (Q) to (17/2 ⁻), 504.5γ to (19/2 ⁻); band assignment.
1926.0 [#] 4	(19/2 ⁺)	C	J ^π : 617.4γ ΔJ=2, Q to (15/2 ⁺); band assignment.
2018.1 ^a 3	(23/2 ⁻)	BCD	J ^π : 692.5γ ΔJ=2, Q to (19/2 ⁻), 188.0γ to (21/2 ⁻); band assignment.
2154.47 ^{&} 25	(21/2 ⁺)	BC	J ^π : 673.5γ ΔJ=2, Q to (17/2 ⁺), 828.9γ to (19/2 ⁺); band assignment.
2515.9 [@] 4	(23/2 ⁺)	BC	J ^π : 697.8γ ΔJ=2, Q to (19/2 ⁺), 686.1γ to (21/2 ⁺); band assignment.
2613.2 [#] 5	(23/2 ⁺)	C	J ^π : 686.7γ ΔJ=2, Q to (19/2 ⁺); band assignment.
2614.4 ^b 4	(25/2 ⁻)	BC	J ^π : 784.3γ to (21/2 ⁻); band assignment.
2798.1 ^a 4	(27/2 ⁻)	BCD	J ^π : 780.0γ ΔJ=2, Q to (23/2 ⁻), 183.7γ to (25/2 ⁻); band assignment.
2863.9 ^{&} 3	(25/2 ⁺)	BC	J ^π : 709.4γ ΔJ=2, Q to (21/2 ⁺), 854.8γ to (23/2 ⁺); band assignment.
3188.9 [@] 5	(27/2 ⁺)	C	J ^π : 673.4γ ΔJ=2, Q to (23/2 ⁺), 575.2γ to (25/2 ⁺); band assignment.
3242? 1		B	J ^π : (27/2 ⁺) from proposed band structure in (³² S, 2pnγ).
3341.3 [#] 7	(27/2 ⁺)	C	J ^π : 728.1γ to (23/2 ⁺); band assignment.
3350.4 ^b 5	(29/2 ⁻)	BC	J ^π : 736.0γ to (25/2 ⁻), 552.3γ to (27/2 ⁻); band assignment.
3582?& 1	(29/2 ⁺)	B	E(level), J ^π : band assignment from (³² S, 2pnγ).
3591.7 ^a 6	(31/2 ⁻)	BC	J ^π : 793.4γ to (27/2 ⁻); band assignment.
4000.6 ^b 7	(33/2 ⁻)	BC	J ^π : 650.4γ to (29/2 ⁻); band assignment.
4360.7 ^a 7	(35/2 ⁻)	BC	J ^π : 768.9γ to (31/2 ⁻); band assignment.
4763.1 ^b 9	(37/2 ⁻)	B	J ^π : band assignment.
5210.9 ^a 10	(39/2 ⁻)	B	J ^π : band assignment.
5672.0 ^b 11	(41/2 ⁻)	B	J ^π : band assignment.
6174.0 ^a 12	(43/2 ⁻)	B	J ^π : band assignment.
6716.0 ^b 15	(45/2 ⁻)	B	J ^π : band assignment.
7243.0 ^a 16	(47/2 ⁻)	B	J ^π : band assignment.
7880.0 ^b 18	(49/2 ⁻)	B	J ^π : band assignment.
8400.0 ^a 19	(51/2 ⁻)	B	J ^π : band assignment.
9131? ^b 2	(53/2 ⁻)	B	J ^π : band assignment.
9605.0? ^a 21	(55/2 ⁻)	B	J ^π : band assignment.
10839.0? ^a 24	(59/2 ⁻)	B	J ^π : band assignment.
12146 ^a 3	(63/2 ⁻)	B	J ^π : band assignment.
13549 ^a 3	(67/2 ⁻)	B	J ^π : band assignment.

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Adopted Levels, Gammas (continued) ^{123}Ba Levels (continued)[†] From a least-squares fit to γ -ray energies.[‡] Band(A): Band 1, configuration= $\nu s_{1/2}$, $\alpha=+1/2$. Nilsson orbit= $1/2[411]$ (1988Wy02).# Band(a): Band 2, configuration= $\nu s_{1/2}$, $\alpha=-1/2$. Nilsson orbit= $1/2[411]$ (1988Wy02).@ Band(B): Band 3, configuration= $\nu(d_{5/2}+g_{7/2})$, $\alpha=-1/2$. Nilsson orbit= $5/2[402]$ (1988Wy02).& Band(b): Band 4, configuration= $\nu(d_{5/2}+g_{7/2})$, $\alpha=+1/2$. Nilsson orbit= $5/2[402]$ (1988Wy02). Band assignments above $(35/2^-)$ are from $(^{32}\text{S}, 2\text{pn}\gamma)$ (1988Wy02).^a Band(C): Band 5, configuration= $\nu h_{11/2}$, $\alpha=-1/2$. Nilsson orbit= $7/2[523]$ (1988Wy02). Band assignments above $(33/2^-)$ are from $(^{32}\text{S}, 2\text{pn}\gamma)$ (1988Wy02).^b Band(c): Band 6, configuration= $\nu h_{11/2}$, $\alpha=+1/2$. Nilsson orbit= $7/2[523]$ (1988Wy02). $\gamma(^{123}\text{Ba})$

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. #	$\alpha^@$	Comments
92.68	$(7/2^-)$	92.7 1	100	0.0	$5/2^{(+)}$	(E1)	0.282	E_γ : weighted average of 92.5 3 from $^{123}\text{La } \varepsilon$ decay, 92.5 2 from $(^{19}\text{F}, 3\text{np}\gamma)$, and 92.7 1 from $(^{12}\text{C}, 3\text{n}\gamma)$. Mult.: D from $\gamma\gamma(\text{DCO})$ in $(^{19}\text{F}, 3\text{np}\gamma)$; (E1) from level scheme. Other: (D+Q) from $\gamma(\theta)$ in $(^{12}\text{C}, 3\text{n}\gamma)$.
120.98	$(1/2^+)$	120.9 [‡] 3	100	0.0	$5/2^{(+)}$	(E2)	0.993	B(E2)(W.u.)=0.36 3 Mult.: E2 or M1+E2 from ce data in $^{123}\text{La } \varepsilon$ decay; (E2) from level scheme.
153.74	$(3/2^+)$	153.6 3	100	0.0	$5/2^{(+)}$	M1		E_γ : weighted average of 153.6 3 from $^{123}\text{La } \varepsilon$ decay and 153.6 5 from $(^{19}\text{F}, 3\text{np}\gamma)$. Mult.: M1, E2 from ce data in $^{123}\text{La } \varepsilon$ decay; D from $\gamma\gamma(\text{DCO})$ in $(^{19}\text{F}, 3\text{np}\gamma)$.
169.00	$(7/2^+)$	169.0 2	100	0.0	$5/2^{(+)}$	(M1)		E_γ : weighted average of 169.0 3 from $^{123}\text{La } \varepsilon$ decay, 169.0 2 from $(^{19}\text{F}, 3\text{np}\gamma)$, and 169.6 10 from $(^{12}\text{C}, 3\text{n}\gamma)$. Mult.: D from $\gamma\gamma(\text{DCO})$ in $(^{19}\text{F}, 3\text{np}\gamma)$; (M1) from level scheme.
202.63	$(9/2^-)$	110.0 1	100	92.68	$(7/2^-)$	(D+Q)		E_γ : weighted average of 109.8 3 from $^{123}\text{La } \varepsilon$ decay, 109.8 2 from $(^{19}\text{F}, 3\text{np}\gamma)$, and 110.0 1 from $(^{12}\text{C}, 3\text{n}\gamma)$. Mult.: (D+Q) from $\gamma(\theta)$ in $(^{12}\text{C}, 3\text{n}\gamma)$ and $\gamma\gamma(\text{DCO})$ in $(^{19}\text{F}, 3\text{np}\gamma)$.
328.06	$(5/2^+)$	159.0 [‡] 3 174.4 [‡] 2 207.0 3	12 [‡] 1 100 [‡] 12 62 [‡] 8	169.00 $(7/2^+)$ 153.74 $(3/2^+)$ 120.98 $(1/2^+)$		M1, E2 Q		Mult.: from ce data in $^{123}\text{La } \varepsilon$ decay. E_γ : weighted average of 207.0 3 from $^{123}\text{La } \varepsilon$ decay and 207.0 5 from $(^{19}\text{F}, 3\text{np}\gamma)$.
335.76	$(11/2^-)$	328.0 [‡] 3 133.2 2	27 [‡] 3 100 7	0.0 $5/2^{(+)}$ 202.63 $(9/2^-)$		(D+Q)		E_γ : weighted average of 133.2 3 from $^{123}\text{La } \varepsilon$ decay, 133.3 2 from $(^{19}\text{F}, 3\text{np}\gamma)$, and 133.3 10 from $(^{12}\text{C}, 3\text{n}\gamma)$. I_γ : other: 100 13 from $^{123}\text{La } \varepsilon$ decay. E_γ : weighted average of 243.1 3 from $^{123}\text{La } \varepsilon$ decay and 243.1 5 from $(^{19}\text{F}, 3\text{np}\gamma)$. I_γ : also from $^{123}\text{La } \varepsilon$ decay.
374.23	$(9/2^+)$	243.1 3 205.2 2	32 3 100 5	92.68 $(7/2^-)$ 169.00 $(7/2^+)$		Q (D+Q)		E_γ : weighted average of 205.2 3 from $^{123}\text{La } \varepsilon$ decay, 205.2 2 from $(^{19}\text{F}, 3\text{np}\gamma)$, and 205.3 2 from $(^{12}\text{C}, 3\text{n}\gamma)$.

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Adopted Levels, Gammas (continued)

$\gamma(^{123}\text{Ba})$ (continued)							Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. #	
374.23	(9/2 ⁺)	374.3 3	48 6	0.0	5/2 ⁽⁺⁾		Mult.: from $\gamma(\theta)$ in ($^{12}\text{C},3\text{n}\gamma$) and $\gamma\gamma(\text{DCO})$ in ($^{19}\text{F},2\text{n}\text{p}\gamma$).
							I_γ : other: 100 8 from ($^{12}\text{C},3\text{n}\gamma$).
397.48	(7/2 ⁺)	374.3 3					E_γ : weighted average of 374.3 3 from $^{123}\text{La } \varepsilon$ decay and 374.2 5 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
							I_γ : unweighted average of 42 4 from $^{123}\text{La } \varepsilon$ decay and 53.2 12 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
397.48	(7/2 ⁺)	69.4 3	7.4 $\pm$ 7	328.06	(5/2 ⁺)		E_γ : weighted average of 69.5 3 from $^{123}\text{La } \varepsilon$ decay and 69.1 5 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
		228.5 $\pm$ 1	6.4 $\pm$ 6	169.00	(7/2 ⁺)		
		243.6 2	100 $\pm$ 10	153.74	(3/2 ⁺)	(E2)	E_γ : weighted average of 243.9 3 from $^{123}\text{La } \varepsilon$ decay and 243.4 2 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
							Mult.: M1,E2 from ce data in $^{123}\text{La } \varepsilon$ decay; (E2) from level scheme.
460.9		368.2 $\pm$ 3	100	92.68	(7/2 ⁻)		
482.30		313.3 $\pm$ 3	18 $\pm$ 2	169.00	(7/2 ⁺)		
		482.3 $\pm$ 3	100 $\pm$ 8	0.0	5/2 ⁽⁺⁾		
564.50		361.9 $\pm$ 3	100 $\pm$ 9	202.63	(9/2 ⁻)		
		471.8 $\pm$ 3	47 $\pm$ 6	92.68	(7/2 ⁻)		
582.57	(13/2 ⁻)	246.8 2	100 6	335.76	(11/2 ⁻)	(D+Q)	E_γ : weighted average of 246.7 3 from $^{123}\text{La } \varepsilon$ decay, 246.7 2 from ($^{19}\text{F},3\text{n}\text{p}\gamma$), and 247.0 3 from ($^{12}\text{C},3\text{n}\gamma$).
							I_γ : others: 100 8 from $^{123}\text{La } \varepsilon$ decay, 100 14 from ($^{12}\text{C},3\text{n}\gamma$).
							Mult.: from $\gamma(\theta)$ in ($^{12}\text{C},3\text{n}\gamma$) and $\gamma\gamma(\text{DCO})$ in ($^{19}\text{F},2\text{n}\text{p}\gamma$).
		380.0 2	62 3	202.63	(9/2 ⁻)		E_γ : weighted average of 380.0 3 from $^{123}\text{La } \varepsilon$ decay, 380.0 2 from ($^{19}\text{F},3\text{n}\text{p}\gamma$), and 380.1 10 from ($^{12}\text{C},3\text{n}\gamma$).
							I_γ : weighted average of 71 8 from $^{123}\text{La } \varepsilon$ decay and 61 3 from ($^{19}\text{F},3\text{n}\text{p}\gamma$). Other: 123 24 from ($^{12}\text{C},3\text{n}\gamma$) is in disagreement.
612.15	(11/2 ⁺)	238.0 2	92 5	374.23	(9/2 ⁺)	(D+Q)	E_γ : weighted average of 238.4 3 from $^{123}\text{La } \varepsilon$ decay, 237.7 2 from ($^{19}\text{F},3\text{n}\text{p}\gamma$), and 238.1 3 from ($^{12}\text{C},3\text{n}\gamma$).
							I_γ : weighted average of 86 10 from $^{123}\text{La } \varepsilon$ decay and 94 5 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
							Mult.: from $\gamma(\theta)$ in ($^{12}\text{C},3\text{n}\gamma$) and $\gamma\gamma(\text{DCO})$ in ($^{19}\text{F},2\text{n}\text{p}\gamma$).
		409.6 5	48 11	202.63	(9/2 ⁻)		
		443.1 3	100 6	169.00	(7/2 ⁺)	Q	E_γ : weighted average of 443.5 3 from $^{123}\text{La } \varepsilon$ decay and 442.9 2 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
							I_γ : other: 100 10 from $^{123}\text{La } \varepsilon$ decay.
695.28	(9/2 ⁺)	297.8 $\pm$ 3	38 $\pm$ 4	397.48	(7/2 ⁺)		
		367.2 3	100 $\pm$ 9	328.06	(5/2 ⁺)		
							E_γ : weighted average of 367.2 3 from $^{123}\text{La } \varepsilon$ decay and 367.2 5 from ($^{19}\text{F},3\text{n}\text{p}\gamma$).
721.42	(7/2 ⁻ ,9/2,11/2 ⁻)	526.3 $\pm$ 3	23 $\pm$ 3	169.00	(7/2 ⁺)		
		385.8 $\pm$ 3	100 $\pm$ 10	335.76	(11/2 ⁻)		
		518.8 $\pm$ 3	69 $\pm$ 7	202.63	(9/2 ⁻)		
		628.6 $\pm$ 3	69 $\pm$ 7	92.68	(7/2 ⁻)		

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Adopted Levels, Gammas (continued)

$\gamma(^{123}\text{Ba})$ (continued)							Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [#]	
756.75	(15/2 ⁻)	174.2 2	22.2 16	582.57	(13/2 ⁻)	(D+Q)	E_γ : weighted average of 174.2 2 from ($^{19}\text{F}, 3\text{np}\gamma$) and 174.4 10 from ($^{12}\text{C}, 3\text{n}\gamma$). I_γ : other: ≈ 20 in ($^{12}\text{C}, 3\text{n}\gamma$).
790.86	(11/2 ⁺)	421.3 8 393.3 2	100 5 100	335.76 (11/2 ⁻) 397.48 (7/2 ⁺)	Q Q		E_γ : weighted average of 393.4 3 from ^{123}La ε decay and 393.3 2 from ($^{19}\text{F}, 3\text{np}\gamma$).
799.45		596.9 [‡] 3	100 [‡] 10	202.63 (9/2 ⁻)			
		706.7 [‡] 3	72 [‡] 7	92.68 (7/2 ⁻)			
877.70	(13/2 ⁺)	265.7 5 503.4 2	39 3 100 6	612.15 (11/2 ⁺) 374.23 (9/2 ⁺)	Q		
1091.0		693.5 [‡] 3	56 [‡] 6	397.48 (7/2 ⁺)			
		937.3 [‡] 3	100 [‡] 10	153.74 (3/2 ⁺)			
1136.73	(17/2 ⁻)	380.0 2	61 11	756.75 (15/2 ⁻)			E_γ : weighted average of 380.0 2 from ($^{19}\text{F}, 3\text{np}\gamma$) and 380.1 10 from ($^{12}\text{C}, 3\text{n}\gamma$). I_γ : other: 123 24 from ($^{12}\text{C}, 3\text{n}\gamma$) is in disagreement.
		554.2 2	100 7	582.57 (13/2 ⁻)	(Q)		E_γ : weighted average of 554.2 2 from ($^{19}\text{F}, 3\text{np}\gamma$) and 553.7 6 from ($^{12}\text{C}, 3\text{n}\gamma$). I_γ : other: 100 17 from ($^{12}\text{C}, 3\text{n}\gamma$).
1171.90	(15/2 ⁺)	294.1 5 559.8 2 589.4 5	31.1 19 100 6 13 3	877.70 (13/2 ⁺) 612.15 (11/2 ⁺) 582.57 (13/2 ⁻)	Q		
1308.5	(15/2 ⁺)	517.6 2	100	790.86 (11/2 ⁺)	Q		
1325.63	(19/2 ⁻)	188.9 5	≈ 46	1136.73 (17/2 ⁻)			E_γ : weighted average of 188.9 5 from ($^{19}\text{F}, 3\text{np}\gamma$) and 189.1 10 from ($^{12}\text{C}, 3\text{n}\gamma$). I_γ : from ($^{12}\text{C}, 3\text{n}\gamma$).
		568.9 2	100 15	756.75 (15/2 ⁻)	Q		E_γ : weighted average of 568.9 2 from ($^{19}\text{F}, 3\text{np}\gamma$) and 569.0 6 from ($^{12}\text{C}, 3\text{n}\gamma$). I_γ : from ($^{12}\text{C}, 3\text{n}\gamma$).
1480.94	(17/2 ⁺)	309.1 5 603.2 2	26.5 21 100 6	1171.90 (15/2 ⁺) 877.70 (13/2 ⁺)	Q		
1818.4	(19/2 ⁺)	337.4 5 646.5 2		1480.94 (17/2 ⁺) 1171.90 (15/2 ⁺)	Q		
1830.1	(21/2 ⁻)	504.5 5 693.7 5	72 7 100 11	1325.63 (19/2 ⁻) 1136.73 (17/2 ⁻)	(Q)		E_γ : weighted average of 693.4 5 from ($^{19}\text{F}, 3\text{np}\gamma$) and 694.7 10 from ($^{12}\text{C}, 3\text{n}\gamma$).
1926.0	(19/2 ⁺)	617.4 2	100	1308.5 (15/2 ⁺)	Q		
2018.1	(23/2 ⁻)	188.0 5 692.5 2		1830.1 (21/2 ⁻) 1325.63 (19/2 ⁻)	Q		E_γ : other: 694.7 10 for a doublet.
2154.47	(21/2 ⁺)	336.1 5 673.5 2	100 6 100 14	1818.4 (19/2 ⁺) 1480.94 (17/2 ⁺)	Q		
		828.9 5	24 7	1325.63 (19/2 ⁻)			
2515.9	(23/2 ⁺)	361.7 5 686.1 5		2154.47 (21/2 ⁺) 1830.1 (21/2 ⁻)			
		697.8 5	32 10 100 7	1818.4 (19/2 ⁺)	Q		
2613.2	(23/2 ⁺)	686.7 5	100	1926.0 (19/2 ⁺)	Q		
2614.4	(25/2 ⁻)	596.3 5 784.3 5		2018.1 (23/2 ⁻) 1830.1 (21/2 ⁻)			
2798.1	(27/2 ⁻)	183.7 5 780.0 2	100 15 100 8	2614.4 (25/2 ⁻) 2018.1 (23/2 ⁻)	Q		E_γ : weighted average of 780.0 2 from ($^{19}\text{F}, 3\text{np}\gamma$) and 780.6 10 from ($^{12}\text{C}, 3\text{n}\gamma$).
2863.9	(25/2 ⁺)	349 709.4 2		2515.9 (23/2 ⁺) 2154.47 (21/2 ⁺)	Q		E_γ : from ($^{32}\text{S}, 2\text{pn}\gamma$) only.
		845.8 2	100 15	2018.1 (23/2 ⁻)			
3188.9	(27/2 ⁺)	575.2 5	57 12	2613.2 (23/2 ⁺)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{123}\text{Ba})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [#]	Comments
3188.9	(27/2 ⁺)	673.4 5	100 17	2515.9	(23/2 ⁺)	Q	
3242?		726&		2515.9	(23/2 ⁺)		E_γ : from ($^{32}\text{S}, 2\text{pn}\gamma$) only.
3341.3	(27/2 ⁺)	728.1 5	100	2613.2	(23/2 ⁺)		
3350.4	(29/2 ⁻)	552.3 5		2798.1	(27/2 ⁻)		
		736.0 5	100 12	2614.4	(25/2 ⁻)		
3582?	(29/2 ⁺)	718&		2863.9	(25/2 ⁺)		E_γ : from ($^{32}\text{S}, 2\text{pn}\gamma$) only.
3591.7	(31/2 ⁻)	240&		3350.4	(29/2 ⁻)		E_γ : from ($^{32}\text{S}, 2\text{pn}\gamma$) only.
		793.4 5		2798.1	(27/2 ⁻)		
4000.6	(33/2 ⁻)	408&		3591.7	(31/2 ⁻)		E_γ : from ($^{32}\text{S}, 2\text{pn}\gamma$) only.
		650.4 5		3350.4	(29/2 ⁻)		
4360.7	(35/2 ⁻)	361&		4000.6	(33/2 ⁻)		E_γ : from ($^{32}\text{S}, 2\text{pn}\gamma$) only.
		768.9 5		3591.7	(31/2 ⁻)		
4763.1	(37/2 ⁻)	402		4360.7	(35/2 ⁻)		
		763		4000.6	(33/2 ⁻)		
5210.9	(39/2 ⁻)	448		4763.1	(37/2 ⁻)		
		850		4360.7	(35/2 ⁻)		
5672.0	(41/2 ⁻)	461		5210.9	(39/2 ⁻)		
		909		4763.1	(37/2 ⁻)		
6174.0	(43/2 ⁻)	502		5672.0	(41/2 ⁻)		
		963		5210.9	(39/2 ⁻)		
6716.0	(45/2 ⁻)	1044		5672.0	(41/2 ⁻)		
7243.0	(47/2 ⁻)	1069		6174.0	(43/2 ⁻)		
7880.0	(49/2 ⁻)	1164		6716.0	(45/2 ⁻)		
8400.0	(51/2 ⁻)	1157		7243.0	(47/2 ⁻)		
9131?	(53/2 ⁻)	1251&		7880.0	(49/2 ⁻)		
9605.0?	(55/2 ⁻)	1205&		8400.0	(51/2 ⁻)		
10839.0?	(59/2 ⁻)	1234&		9605.0?	(55/2 ⁻)		
12146	(63/2 ⁻)	1307		10839.0?	(59/2 ⁻)		
13549	(67/2 ⁻)	1403		12146	(63/2 ⁻)		

[†] From ($^{19}\text{F}, 3\text{pn}\gamma$) up to 4765 level and from ($^{32}\text{S}, 2\text{pn}\gamma$) above that, unless otherwise noted.

[‡] From ^{123}La ϵ decay.

[#] From ($^{19}\text{F}, 3\text{pn}\gamma$) based on measured DCO ratios with $\Delta J=1$ for D $\Delta J=2$ for Q, unless otherwise noted.

[@] 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.

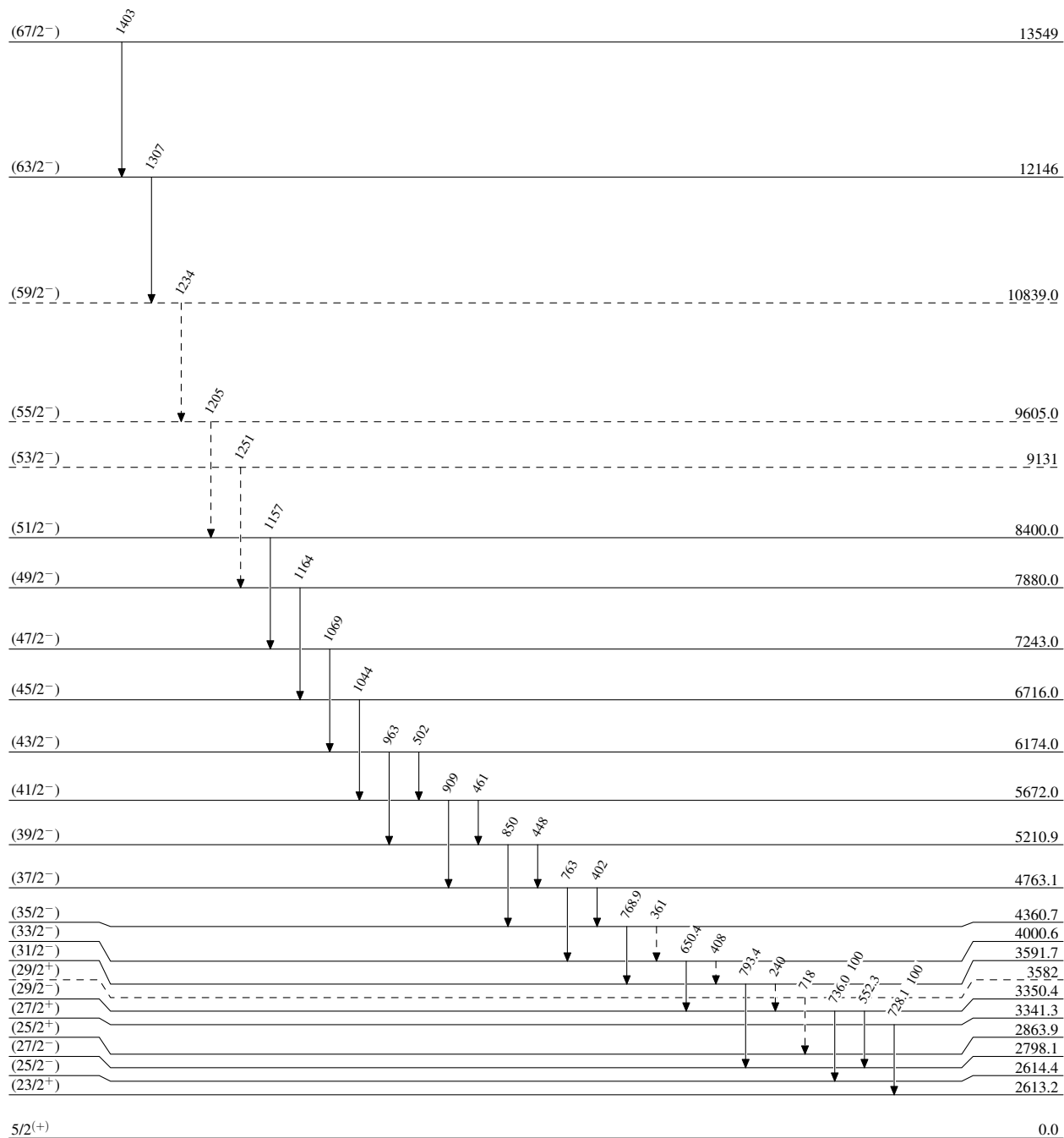
[&] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

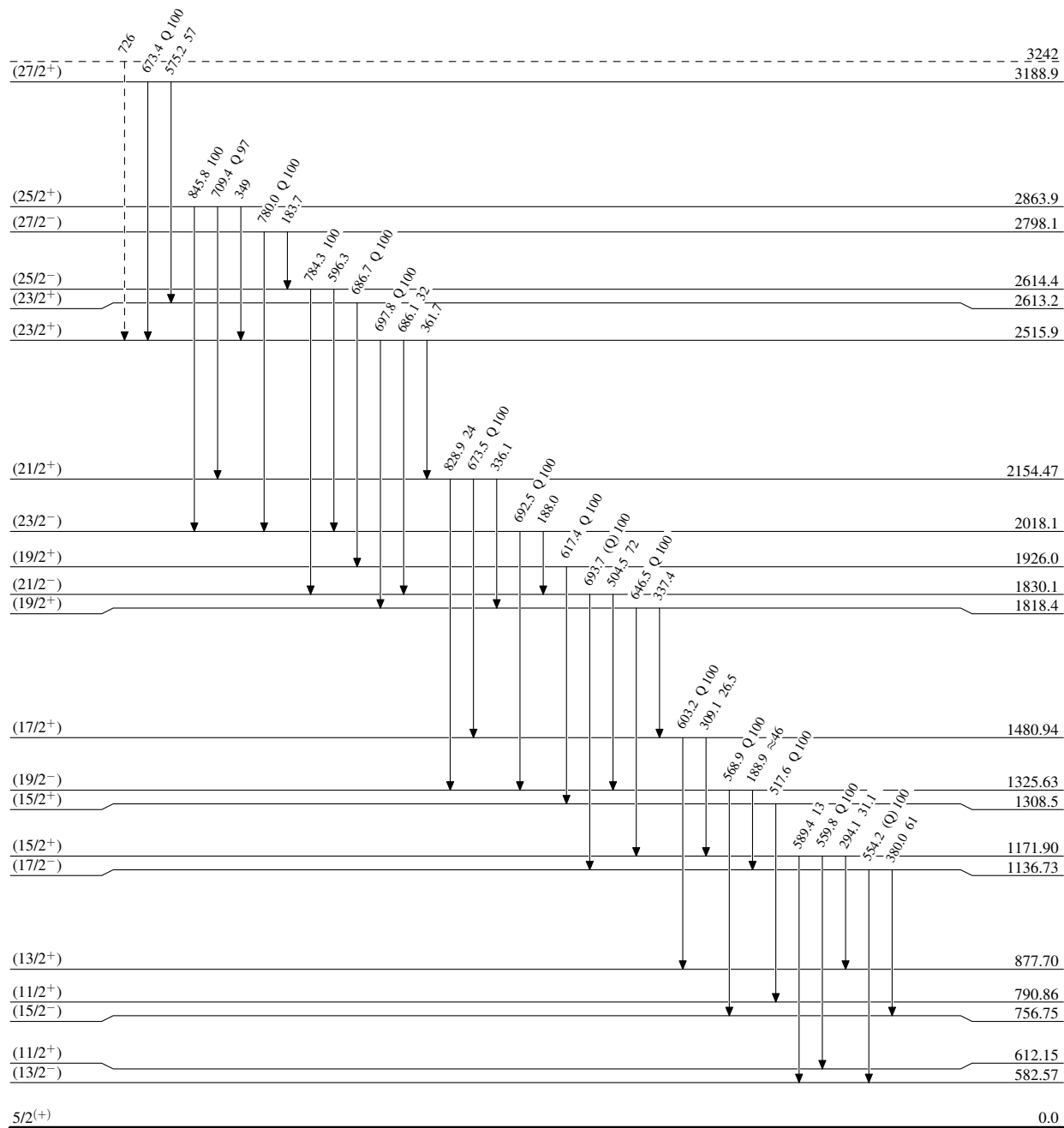
----- ► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

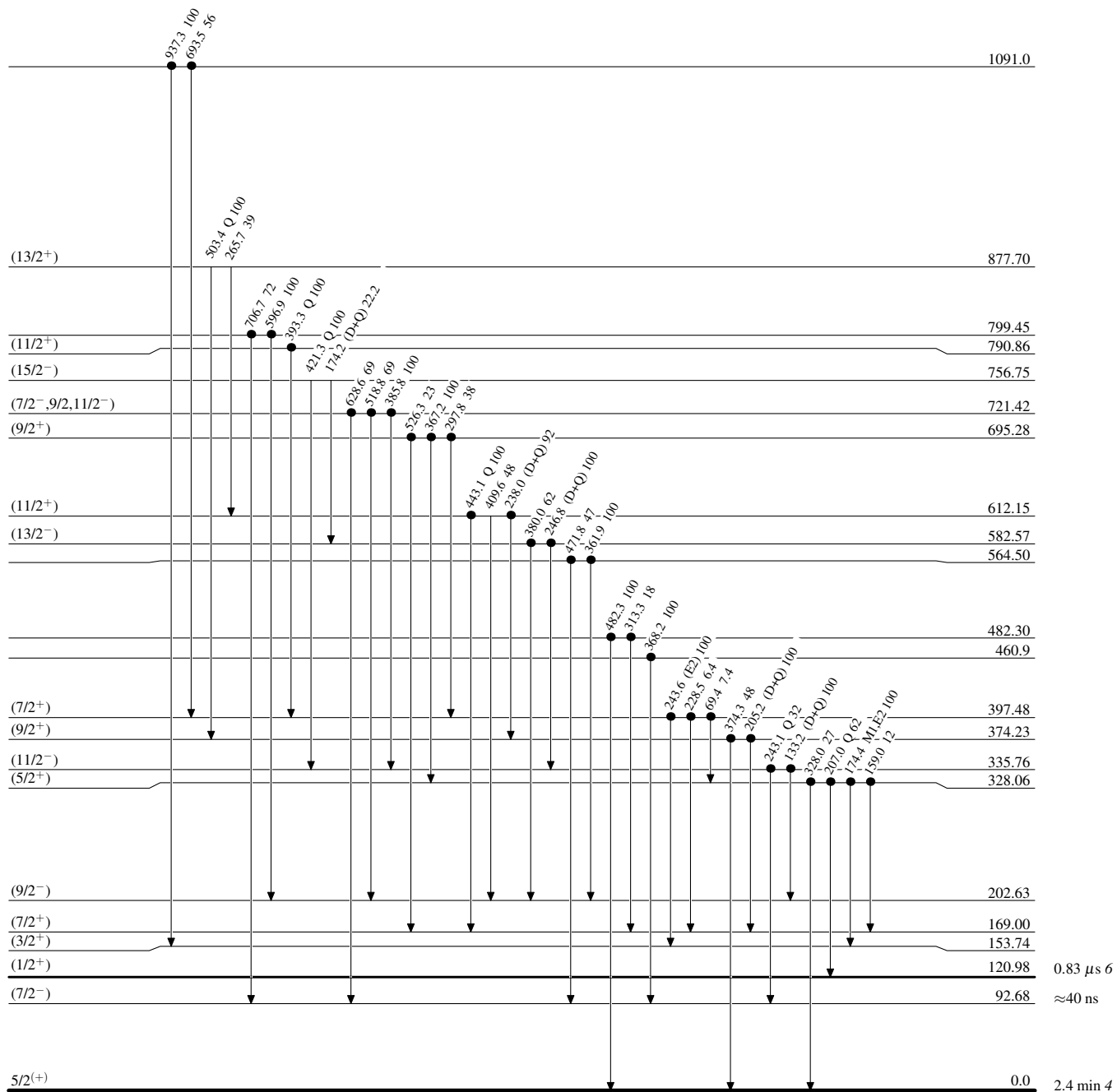
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

● Coincidence

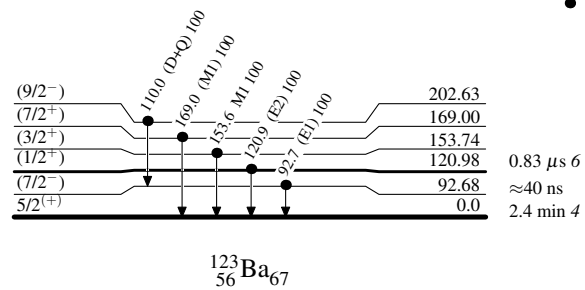


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, Gammas