

Adopted Levels, Gammas

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Jean Blachot	ENSDF	1-Mar-2009

$Q(\beta^-) = -8.87 \times 10^3$ 21; $S(n) = 1.250 \times 10^4$ syst; $S(p) = 7.4 \times 10^2$ 7; $Q(\alpha) = 2.20 \times 10^3$ 7 [2012Wa38](#)

Note: Current evaluation has used the following Q record -9205 SY12497 SY7.4E+2 6 2200 60 [2009AuZZ](#).

$\Delta Q(\beta^-) = 307$, $\Delta S(n) = 118$ ([2009AuZZ](#)).

600-MeV protons on lanthanum, ms, ([1986Ma41](#), [1978Da07](#), [1972Ra16](#)). Two ^{117}Cs isomers could exist from β decay studies as suggested by the discrepancy between half-life measurements. The $T_{1/2} = 6.5 \pm 0.4$ ([1978Da07](#)) was obtained from high-energy part of the positron spectrum.

If one assumes: 1. $E(b^+) > 7$ MeV events are primarily from one activity, 2. ^{117}Ba decay mainly populates the low-spin ($3/2^+$) activity; 3. 205 gamma doublet is mainly emitted by the 8.4(6) s activity; then one can assign 6.5(4) s activity to ($3/2^+$) level and 8.4(6) s activity to ($9/2^+$).

 ^{117}Cs LevelsCross Reference (XREF) Flags

A ^{117}Ba β^+ decay
 B (HI,xn γ)
 C $^{58}\text{Ni}(^{64}\text{Zn}, \alpha p \gamma)$

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
0 &	(9/2 ⁺)	8.4 s 6	A C	$\% \varepsilon + \% \beta^+ = 100$ (1978Da07) J ^π : from syst (2003Au03). T _{1/2} : from 1986Ma41 , ms. Other: 8 s 2 (1972Ra16) integral b+ spectrum.
0+x [#]	(11/2 ⁻)		BC	
0+z @	(3/2 ⁺)	6.5 s 4	A C	$\% \varepsilon + \% \beta^+ > 0$ (1978Da07) T _{1/2} : from positron spectrum above 7 MeV (1978Da07). 1986Ma41 has found most of the gammas with T _{1/2} around 8. E(level): E=150 80 from syst and positron spectrum (2003Au03).
231.1 ^a 2	(11/2 ⁺)		C	
306.1+x [#] 3	(15/2 ⁻)		BC	
345.2 @ 3	(7/2 ⁺)		C	
489.4 & 2	(13/2 ⁺)		C	
772.2 ^a 3	(15/2 ⁺)		C	
780.8 @ 5	(11/2 ⁺)		C	
800.9+x [#] 5	(19/2 ⁻)		BC	
1077.9 & 3	(17/2 ⁺)		C	
1337.3 @ 6	(15/2 ⁺)		C	
1404.3 & 4	(19/2 ⁺)		C	
1427.8+x [#] 6	(23/2 ⁻)		BC	
1747.0 & 4	(21/2 ⁺)		C	
1903.4 @ 6	(19/2 ⁺)		C	
2104.6 & 4	(23/2 ⁺)		C	
2150.6+x [#] 6	(27/2 ⁻)		BC	
2453.0 @ 7	(23/2 ⁺)		C	
2473.7 & 5	(25/2 ⁺)		C	
2852.1 ^a 5	(27/2 ⁺)		C	
2946.3+x [#] 7	(31/2 ⁻)		C	

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Adopted Levels, Gammas (continued) ^{117}Cs Levels (continued)

E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF
3069.3 [@] 8	(27/2 ⁺)	C	4904.4 ^{&} 6	(37/2 ⁺)	C	7232.4 ^a 7	(47/2 ⁺)	C
3238.6 ^{&} 5	(29/2 ⁺)	C	5230+x 2	(39/2 ⁻)	C	7389.3 [@] 10	(47/2 ⁺)	C
3635.2 ^a 5	(31/2 ⁺)	C	5336.8 ^a 6	(39/2 ⁺)	C	7768.1+x [#] 10	(51/2 ⁻)	C
3781.5 [@] 8	(31/2 ⁺)	C	5468.1 [@] 9	(39/2 ⁺)	C	8416.9 [@] 11	(51/2 ⁺)	C
3785.5+x [#] 8	(35/2 ⁻)	C	5600.5+x [#] 9	(43/2 ⁻)	C	8993.0+x [#] 10	(55/2 ⁻)	C
4043.7 ^{&} 5	(33/2 ⁺)	C	5806 ^{&} 6	(41/2 ⁺)	C	9541.2 [@] 11	(55/2 ⁺)	C
4121+x 1	(35/2 ⁻)	C	6258 ^a	(43/2 ⁺)	C	10283.2+x [#] 11	(59/2 ⁻)	C
4465.2 ^a 5	(35/2 ⁺)	C	6395.9 [@] 10	(43/2 ⁺)	C	11633+x [#] 2	(63/2 ⁻)	C
4586.3 [@] 9	(35/2 ⁺)	C	6638.9+x [#] 9	(47/2 ⁻)	C	12982+x [#] 2	(67/2 ⁻)	C
4654.6+x [#] 8	(39/2 ⁻)	C	6800.8 ^{&} 7	(45/2 ⁺)	C	14396+x [#] 2	(71/2 ⁻)	C

[†] From least-squares fit to E γ 's (by evaluator). From systematics, 9/2⁺ g.s. and a 3/2⁺ isomer at 150 100 keV are expected (see 2003Au04).

[‡] From systematics and band assignments (2001Sm01).

Band(A): $\pi h_{11/2}$, 1/2⁻ [550] band, $\alpha=-1/2$. The first upbend is attributed to $\nu h_{11/2}^2$. Observation of only one signature indicates large signature splitting.

@ Band(B): $\pi g_{7/2}/\pi d_{5/2}$, 3/2⁺ [422] or 1/2⁺ [420], $\alpha=-1/2$. The first upbend is attributed to $\pi h_{11/2}^2$ and the second to $\nu h_{11/2}^2$. Observation of only one signature indicates large signature splitting.

& Band(C): $\pi g_{9/2}$ [404] 9/2⁺ band, $\alpha=+1/2$. The first upbend is attributed to $\pi h_{11/2}^2$ and the second to $\nu h_{11/2}^2$.

^a Band(c): $\pi 9/2$ [404] band, $\alpha=-1/2$. See also comment for its signature partner.

 $\gamma(^{117}\text{Cs})$

E _i (level)	J ^π _i	E γ [†]	I γ [†]	E _f	J ^π _f	Mult. [‡]
231.1	(11/2 ⁺)	230.8 3	100	0	(9/2 ⁺)	M1,E2
306.1+x	(15/2 ⁻)	306.1 3	100	0+x	(11/2 ⁻)	E2
345.2	(7/2 ⁺)	195.2 3	100	0+z	(3/2 ⁺)	E2
489.4	(13/2 ⁺)	257.8 3	100	231.1	(11/2 ⁺)	M1,E2
		489.7 3	17 1	0	(9/2 ⁺)	E2
772.2	(15/2 ⁺)	283.1 3	53 4	489.4	(13/2 ⁺)	M1,E2
		541.2 3	13 1	231.1	(11/2 ⁺)	E2
780.8	(11/2 ⁺)	435.6 3	31 1	345.2	(7/2 ⁺)	E2
800.9+x	(19/2 ⁻)	494.8 3	125 20	306.1+x	(15/2 ⁻)	E2
1077.9	(17/2 ⁺)	305.8 3	40 15	772.2	(15/2 ⁺)	M1,E2
		588.2 3	25 2	489.4	(13/2 ⁺)	E2
1337.3	(15/2 ⁺)	556.5 3	28 1	780.8	(11/2 ⁺)	E2
1404.3	(19/2 ⁺)	326.1 3	100 2	1077.9	(17/2 ⁺)	M1,E2
		632.3 3	100 2	772.2	(15/2 ⁺)	E2
1427.8+x	(23/2 ⁻)	626.9 3	100 7	800.9+x	(19/2 ⁻)	E2
1747.0	(21/2 ⁺)	343.2 3	27 2	1404.3	(19/2 ⁺)	M1,E2
		669.2 3	26 2	1077.9	(17/2 ⁺)	E2
1903.4	(19/2 ⁺)	566.1 3	100	1337.3	(15/2 ⁺)	E2
2104.6	(23/2 ⁺)	357.5 3	28 2	1747.0	(21/2 ⁺)	M1,E2
		699.7 3	26 2	1404.3	(19/2 ⁺)	E2
2150.6+x	(27/2 ⁻)	722.8 3	100	1427.8+x	(23/2 ⁻)	E2
2453.0	(23/2 ⁺)	549.6 3	100	1903.4	(19/2 ⁺)	E2
2473.7	(25/2 ⁺)	368.7 3	19 1	2104.6	(23/2 ⁺)	M1,E2
		727.2 3	31 2	1747.0	(21/2 ⁺)	E2
2852.1	(27/2 ⁺)	378.5 3	15 1	2473.7	(25/2 ⁺)	M1,E2
		747.4 3	29 2	2104.6	(23/2 ⁺)	E2

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Adopted Levels, Gammas (continued) $\gamma(^{117}\text{Cs})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]
2946.3+x	(31/2 ⁻)	795.7 3	100	2150.6+x	(27/2 ⁻)	E2
3069.3	(27/2 ⁺)	616.3 3	100	2453.0	(23/2 ⁺)	E2
3238.6	(29/2 ⁺)	385.9 3	14 1	2852.1	(27/2 ⁺)	M1,E2
		765.1 3	22 2	2473.7	(25/2 ⁺)	E2
3635.2	(31/2 ⁺)	396.5 3	11 1	3238.6	(29/2 ⁺)	M1,E2
		783.5 3	25 2	2852.1	(27/2 ⁺)	E2
3781.5	(31/2 ⁺)	712.2 3	100	3069.3	(27/2 ⁺)	E2
3785.5+x	(35/2 ⁻)	839.2 3	100	2946.3+x	(31/2 ⁻)	E2
4043.7	(33/2 ⁺)	408.8 3	8 2	3635.2	(31/2 ⁺)	M1,E2
		804.8 3	23 2	3238.6	(29/2 ⁺)	E2
4121+x	(35/2 ⁻)	1175		2946.3+x	(31/2 ⁻)	E2
4465.2	(35/2 ⁺)	421.7 3	4 3	4043.7	(33/2 ⁺)	M1,E2
		829.9 3	22 6	3635.2	(31/2 ⁺)	E2
4586.3	(35/2 ⁺)	804.8 3	100	3781.5	(31/2 ⁺)	E2
4654.6+x	(39/2 ⁻)	869.1 3	100	3785.5+x	(35/2 ⁻)	E2
4904.4	(37/2 ⁺)	440.2 3	6 2	4465.2	(35/2 ⁺)	M1,E2
		860.5 3	17 2	4043.7	(33/2 ⁺)	E2
5230+x	(39/2 ⁻)	1109	100	4121+x	(35/2 ⁻)	E2
5336.8	(39/2 ⁺)	433.2 3	10 5	4904.4	(37/2 ⁺)	M1,E2
		870.9 3	100 10	4465.2	(35/2 ⁺)	E2
5468.1	(39/2 ⁺)	881.8 3	100	4586.3	(35/2 ⁺)	E2
5600.5+x	(43/2 ⁻)	945.9 3	100	4654.6+x	(39/2 ⁻)	E2
5806	(41/2 ⁺)	902.2 [#] 3	100	4904.4	(37/2 ⁺)	E2
6258?	(43/2 ⁺)	920.8 [#] 3	100	5336.8	(39/2 ⁺)	E2
6395.9	(43/2 ⁺)	927.8 3	100	5468.1	(39/2 ⁺)	E2
6638.9+x	(47/2 ⁻)	1038.4 3	100	5600.5+x	(43/2 ⁻)	E2
6800.8?	(45/2 ⁺)	994.2 [#] 3	100	5806	(41/2 ⁺)	E2
7232.4?	(47/2 ⁺)	974.8 [#] 3	100	6258?	(43/2 ⁺)	E2
7389.3	(47/2 ⁺)	993.4 3	100	6395.9	(43/2 ⁺)	E2
7768.1+x	(51/2 ⁻)	1129.2 3	100	6638.9+x	(47/2 ⁻)	E2
8416.9	(51/2 ⁺)	1027.6 3	100	7389.3	(47/2 ⁺)	
8993.0+x	(55/2 ⁻)	1224.9 3	100	7768.1+x	(51/2 ⁻)	E2
9541.2?	(55/2 ⁺)	1124.3 [#] 3	100	8416.9	(51/2 ⁺)	
10283.2+x	(59/2 ⁻)	1290.1 3	100	8993.0+x	(55/2 ⁻)	E2
11633+x	(63/2 ⁻)	1350 1	100	10283.2+x	(59/2 ⁻)	E2
12982+x?	(67/2 ⁻)	1349 1	100	11633+x	(63/2 ⁻)	E2
14396+x?	(71/2 ⁻)	1413.9 [#] 3	100	12982+x?	(67/2 ⁻)	E2

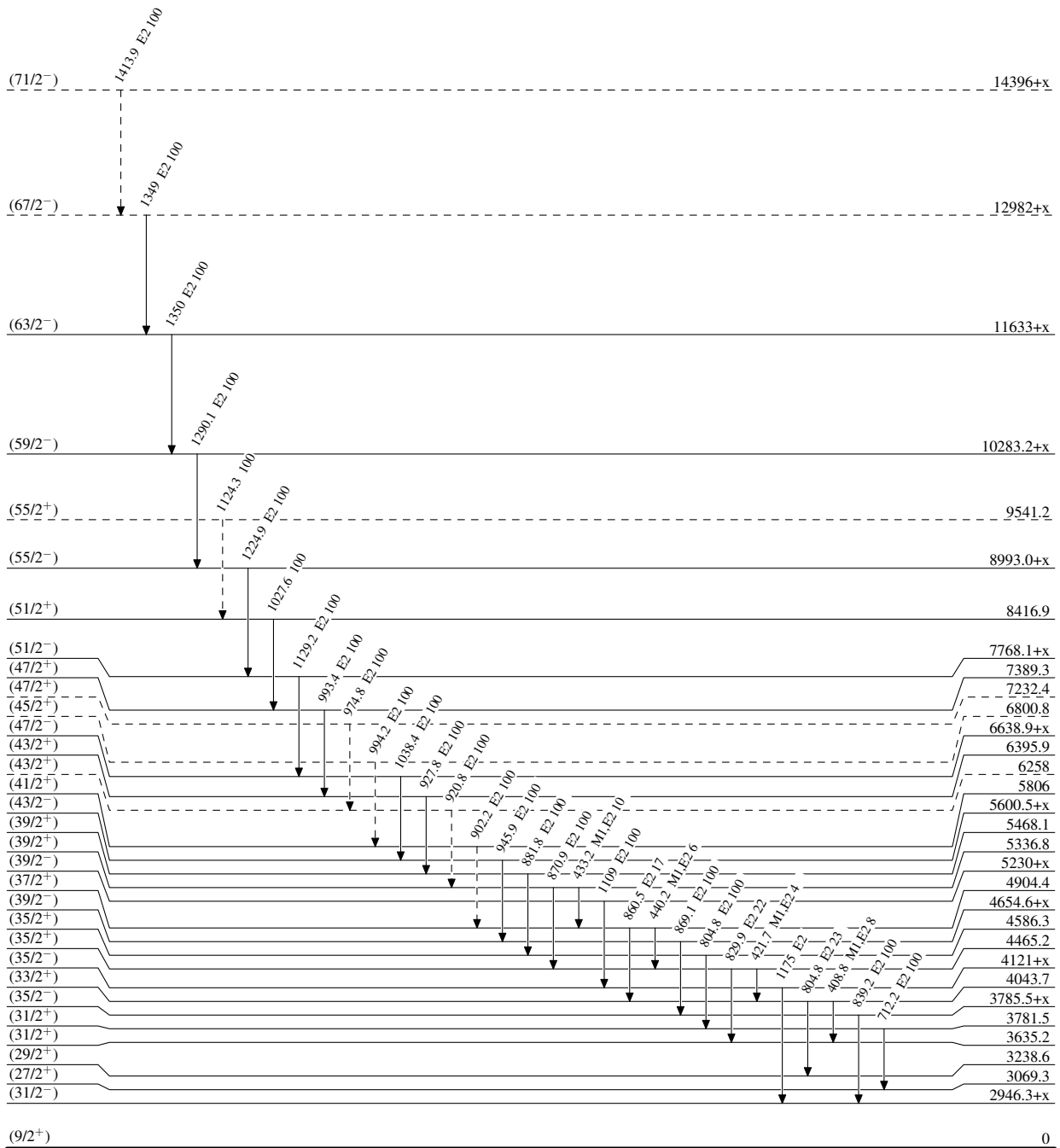
[†] From 2001Sm01.[‡] From $\gamma(\theta)$ in 2001Sm01.[#] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

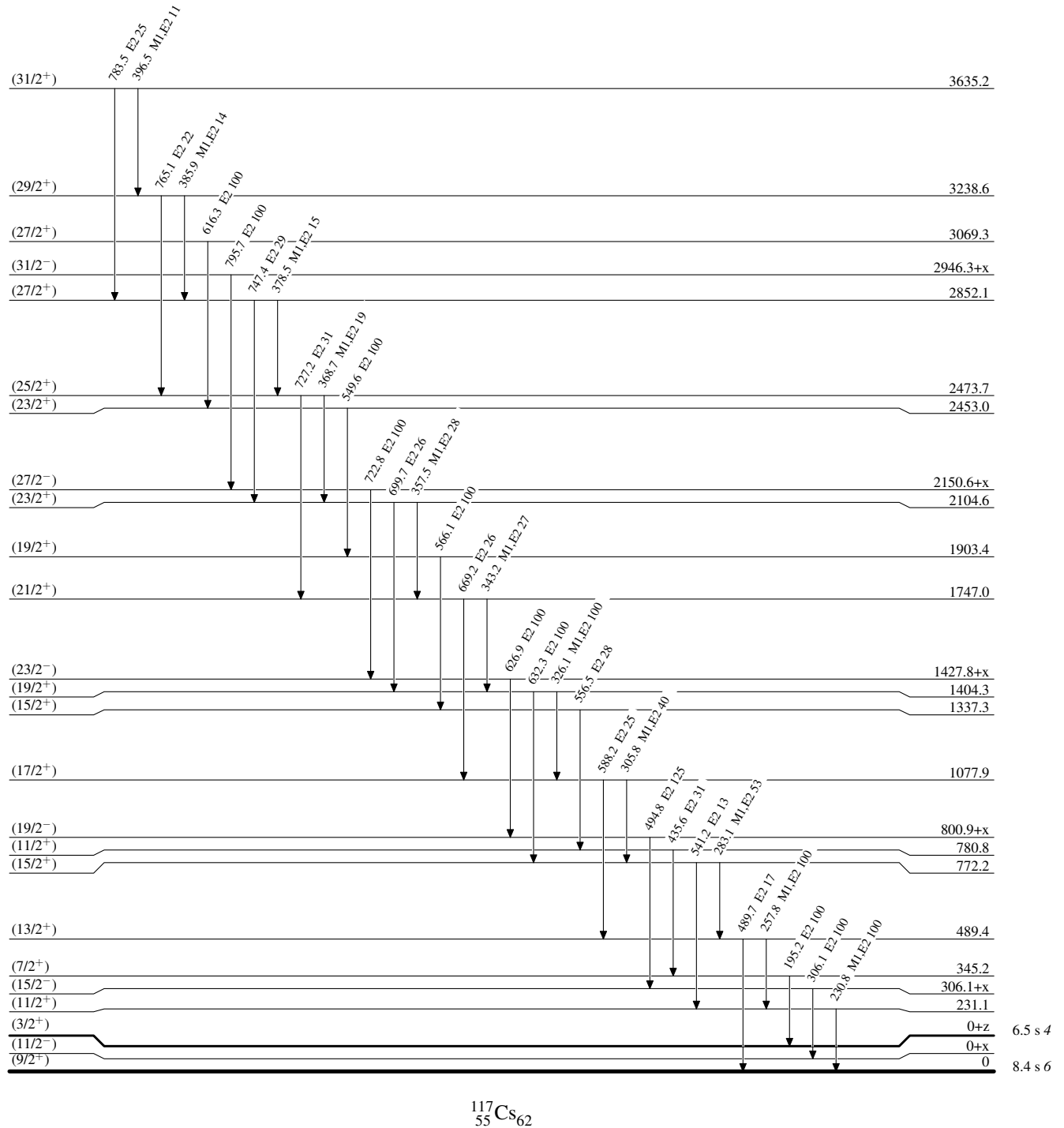
Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



Adopted Levels, Gammas