

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 109,1383 (2008)	1-Mar-2008

$Q(\beta^-) = -5052$ 13; $S(n) = 11028$ 17; $S(p) = 3721$ 12; $Q(\alpha) = -1189$ 12 [2012Wa38](#)

Note: Current evaluation has used the following Q record $-4.98\text{E}+3$ 9 11024 173716 13-1193 20 [2003Au03](#).

 ^{107}In Levels

Cross Reference (XREF) Flags

A	^{107}In IT decay (50.4 s)	E	$^{106}\text{Cd}(p,p'\gamma)$ IAR	I	$^{106}\text{Cd}(\alpha,2p\text{ny})$
B	^{107}Sn ε decay (2.90 min)	F	$^{106}\text{Cd}(d,n\gamma)$	J	$^{94}\text{Mo}(^{16}\text{O},p2n\gamma)$
C	$^{92}\text{Mo}(^{19}\text{F},2p2n\gamma)$	G	$^{106}\text{Cd}(^3\text{He},d)$	K	(HI,xn γ)
D	$^{106}\text{Cd}(p,p),(p,p')$ IAR	H	$^{106}\text{Cd}(^3\text{He},pn\gamma)$		

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0.0 [@]	9/2 ⁺	32.4 min 3	ABC FGH IJK	$\% \varepsilon + \% \beta^+ = 100$ $\mu = +5.585$ 8 (1987Eb02); $Q = +0.807$ 52 (1987Eb02) μ, Q : others: 5.58 53 (1982Va21) NO/S method, Q CFBLS method. T _{1/2} : 32.4 min 3 (1973Ny03) γ -decay curves. Others: 33 min 2 (1949Ma20), 31 min 3 (1963Ba41), 33 min 1 (1971Ri05). J ^π : L($^3\text{He},d$)(g.s.)=4, L($^3\text{He},d$)(678 level)=1. M4 γ connects these two states. B(E3)(W.u.) $< 5 \times 10^{-9}$ for $\Delta J=3$ (if $\delta > 10$). %IT=100
678.5 3	1/2 ⁻	50.4 s 6	AB FGH I	T _{1/2} : 50.4 s 6 (1976Hs01) γ -decay curve. Other: 51.8 s 20 (1973Ny03). E(level): 1/2 ⁻ isomerism occurs at 674,650,537,392,336 keV in ^{105}In , ^{109}In , ^{111}In , ^{113}In , ^{115}In , respectively. J ^π : see g.s.
1001.25 [@] 25	11/2 ⁺		BC F H I J K	E(level): low-lying 11/2 ⁺ states occur regularly at 1026,1153,1173,1133 keV in ^{109}In , ^{111}In , ^{113}In , ^{115}In , respectively. J ^π : E2 γ decay to g.s., excit consistent with 11/2 in (d,n γ). XREF: g(1120).
1107.1 4	(3/2) ⁻		B FgH	E(level): low-lying 3/2 ⁻ states occur at 981,803,647,597 keV in ^{109}In , ^{111}In , ^{113}In , ^{115}In , respectively. J ^π : M1 γ decay to 1/2 ⁻ state, excit consistent with 1/2 in (d,n γ). XREF: g(1120).
1129.3 4	(5/2) ⁺		B FgH	E(level): low-lying 5/2 ⁺ states occur regularly at 1099,1102,1132,1078 keV in ^{109}In , ^{111}In , ^{113}In , ^{115}In , respectively. J ^π : E2 γ decay to g.s., excit consistent with 5/2 in (d,n γ). XREF: g(1120).
1166.1 ^{&} 5	(1/2) ⁺		B FgH	E(level): low-lying 1/2 ⁺ states occur regularly at 1172,1188,1030 keV in ^{109}In , ^{111}In , ^{113}In , respectively. J ^π : E1 γ decay to 1/2 ⁻ state, excit consistent with 1/2 in (d,n γ). XREF: g(1400).
1396.0 ^{&} 5	(5/2) ⁺		B FgH	J ^π : possible E2 γ decay to g.s., K=1/2 ⁺ band member. XREF: g(1400).
1414.8 [@] 5	13/2 ⁺		C FgH I J K	E(level): low-lying 13/2 ⁺ states occur regularly at 1428,1401,1345,1291 keV in ^{109}In , ^{111}In , ^{113}In , ^{115}In , respectively. J ^π : stretched E2 γ to 9/2 ⁺ . XREF: g(1400).
1423.3 4	(9/2) ⁺		B FgH	J ^π : M1 γ decay to 11/2 ⁺ state and excitation consistent with 9/2 in (d,n γ). XREF: g(1400).
1490.9 ^{&} 5	(3/2) ⁺		B FGH	J ^π : L=2 ($^3\text{He},d$), M1 γ to 5/2 ⁺ , γ to 1/2 ⁺ . Possible K=1/2 band member.

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Adopted Levels, Gammas (continued) ^{107}In Levels (continued)

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
1518.9 5	(1/2,3/2,5/2) ⁻		F H	J ^π : E2,M1 to 1/2 ⁻ .
1540.6 5	(⁺)		B F H	J ^π : (E2) γ to g.s.
1733			GH	
1805.6 7			FGH	
1840 20	(1/2 ⁺)		G	J ^π : L=(0) (³ He,d).
1853.6 [@] 11	17/2 ⁺	1.7 ns 3	C HIJK	T _{1/2} : from 1987An09. J ^π : stretched E2 γ to 13/2 ⁺ .
1864.6 7	-		B F H	J ^π : (M1,E2) γ to (3/2) ⁻ .
1910.5 7	-		B F H	J ^π : E2 γ 3/2 ⁻ state.
1937.3 11			F	
1941.3 9			F	
1972.7	(7/2,9/2,11/2)		H	
2004.0 [@] 15	19/2 ⁺	0.6 ns 2	C HIJK	T _{1/2} : from 1987An09. J ^π : M1 γ to 17/2 ⁺ .
2200 20			G	J ^π : L(³ He,d)=0+4,5.
2290 20			G	
2314.8? 12			B	
2320.2 18	(17/2,19/2,21/2) ⁺		C I	J ^π : E2,M1 to 19/2 ⁺ .
2340 20			G	
2395 20			G	
2416.8 3	(17/2,19/2,21/2)		I	J ^π : γ to (17/2,19/2,21/2) ⁺ .
2431.2 3	(17/2,19/2) ⁺		I	J ^π : γ to (17/2,19/2,21/2) ⁺ .
2465.5? 12			B	
2705 20			G	
2795.2 18	21/2 ⁺		C IJK	J ^π : M1+E2 to 19/2 ⁺ .
2889.0 16			K	
3223.8? 9			B	
3283.3 [‡] 15	19/2 ⁻	<0.2 ns	C IJK	T _{1/2} : from 1987An09 in ⁹⁴ Mo(¹⁶ O,p2nγ). J ^π : E1 γ to 17/2 ⁺ .
3314.7 3	(19/2,21/2) ⁺		I K	
3442.2 [‡] 18	21/2 ⁻	<0.2 ns	C IJK	T _{1/2} : from 1987An09 in ⁹⁴ Mo(¹⁶ O,p2nγ). J ^π : M1 γ to 19/2 ⁻ and band assignments.
3537.0 [#] 16	21/2 ⁻		K	
3646.2 [‡] 21	23/2 ⁻		C I K	J ^π : M1 γ to 21/2 ⁻ and E1 γ to 21/2 ⁺ .
3742.6 3	(17/2 to 23/2)		I K	J ^π : γ to 21/2 ⁺ .
3752.0 16			K	
3852.4 3			I	
3853.0 [#] 19	23/2 ⁻		K	
4039.2 [‡] 5	25/2 ⁻		C I K	J ^π : M1 γ to 23/2 ⁻ .
4103.0 17			K	
4213.0 [#] 22	25/2 ⁻		K	
4650.6 [‡] 5	27/2 ⁻		C I K	J ^π : M1 γ to 25/2 ⁻ .
4723.0 [#] 24	27/2 ⁻		K	
4787.0 21			K	
4890.0 24			K	
4902.0 22	29/2 ⁽⁻⁾		K	
5075.0 24			K	
5182.7 [‡] 5	29/2 ⁽⁻⁾		I K	J ^π : γ to 27/2.
5211 [#] 3	29/2 ⁽⁻⁾		K	
5502 3			K	
5566.0 [‡] 22	31/2 ⁽⁻⁾		K	
5655 [#] 3	31/2 ⁽⁻⁾		K	

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Adopted Levels, Gammas (continued)

 ^{107}In Levels (continued)

<u>E(level)[†]</u>		<u>J^π</u>	<u>XREF</u>
6070.0 [‡]	24	33/2 ⁽⁻⁾	K
6989 [#]	3	(33/2)	K
9402	10	5/2 ⁺	D
9815	10	1/2 ⁺	D
10079	10	3/2 ⁺	D

[†] Level energy from least-squares adjustment.

[‡] Band(A): Sequence-1.

[#] Band(B): Sequence-2.

[@] Band(C): Sequence-3.

[&] Band(D): 1/2(431) band (tentative); [1975Di12](#) discuss empirical systematics in ^{107}In - ^{119}In and rotational-model predictions.

Adopted Levels, Gammas (continued)

$\gamma(^{107}\text{In})$									
E _i (level)	J ^{π} _i	E _{γ} [†]	I _{γ} [†]	E _f	J ^{π} _f	Mult. [‡]	δ	$\alpha^{\#}$	Comments
678.5	1/2 ⁻	678.5 3	100	0.0	9/2 ⁺	M4		0.060	B(M4)(W.u.)=11.4 2
1001.25	11/2 ⁺	1001.3 3	100	0.0	9/2 ⁺	E2			
1107.1	(3/2) ⁻	428.5 3	100	678.5	1/2 ⁻	M1			
1129.3	(5/2) ⁺	1129.2 4	100	0.0	9/2 ⁺	E2			
1166.1	(1/2) ⁺	487.6 4	100	678.5	1/2 ⁻	E1			
1396.0	(5/2 ⁺)	1396.0 5	100	0.0	9/2 ⁺	(E2)			
1414.8	13/2 ⁺	413.5 3	37 11	1001.25	11/2 ⁺	M1,E2			
		1414.8 3	100 11	0.0	9/2 ⁺	E2			
1423.3	(9/2) ⁺	422.1 3	51 8	1001.25	11/2 ⁺	M1(+E2)			
		1423.1 5	100 8	0.0	9/2 ⁺	E2,M1			
1490.9	(3/2) ⁺	324.7 7	8 4	1166.1	(1/2) ⁺				M1(+E2)
		361.6 3	100 10	1129.3	(5/2) ⁺				
1518.9	(1/2,3/2,5/2) ⁻	840.4 4	100	678.5	1/2 ⁻	M1,E2			
1540.6	(⁺)	1540.6 5	100	0.0	9/2 ⁺	(E2)			
1733		604.0		1129.3	(5/2) ⁺				
1805.6		678.3 6	≈10	1129.3	(5/2) ⁺				
		1805.7 8	100 25	0.0	9/2 ⁺				
1853.6	17/2 ⁺	438.8 3	100	1414.8	13/2 ⁺	E2			
1864.6	-	757.4 5	100	1107.1	(3/2) ⁻	(M1,E2)			
1910.5	-	803.4 6	100	1107.1	(3/2) ⁻	E2			
		1911 2	78 25	0.0	9/2 ⁺				M1+E2
1937.3		808 1	100	1129.3	(5/2) ⁺				
1941.3		450.4 7	100	1490.9	(3/2) ⁺				
1972.7	(7/2,9/2,11/2)	971.2 2	100	1001.25	11/2 ⁺				
2004.0	19/2 ⁺	150.4 5	100	1853.6	17/2 ⁺				
2314.8?		917 2	22 7	1396.0	(5/2 ⁺)				
		1186 2	100 30	1129.3	(5/2) ⁺				
		2316 2	46 14	0.0	9/2 ⁺				
2320.2	(17/2,19/2,21/2) ⁺	316.0 2	100	2004.0	19/2 ⁺	E2,M1			
2416.8	(17/2,19/2,21/2)	97.3 1	100	2320.2	(17/2,19/2,21/2) ⁺				
2431.2	(17/2,19/2) ⁺	428.1 2	100	2004.0	19/2 ⁺	E2,M1			M1+E2
2465.5?		1071 2	100 30	1396.0	(5/2 ⁺)				
		1335 2	53 16	1129.3	(5/2) ⁺				
		2465 2	≈31	0.0	9/2 ⁺				
2795.2	21/2 ⁺	791.2 2	100	2004.0	19/2 ⁺				
2889.0		1035 1	100	1853.6	17/2 ⁺				
3223.8?		1358 2	65 20	1864.6	-				
		1732 2	29 9	1490.9	(3/2) ⁺				
		2094 2	88 26	1129.3	(5/2) ⁺				
		2116 2	99 30	1107.1	(3/2) ⁻				
		2547 2	100 30	678.5	1/2 ⁻				

Adopted Levels, Gammas (continued)

$\gamma(^{107}\text{In})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	Comments
3223.8?		3225 2	4.0 12	0.0	9/2 ⁺		
3283.3	19/2 ⁻	1279.4 10	9.7 20	2004.0	19/2 ⁺	E1	
		1429.7 3	100	1853.6	17/2 ⁺	E1	Mult.: from 1986Ki11 .
3314.7	(19/2,21/2) ⁺	520.3 2	83 9	2795.2	21/2 ⁺	E2,M1	
		1311.1 1	6.5 12	2004.0	19/2 ⁺		
3442.2	21/2 ⁻	158.9 2	63.5 7	3283.3	19/2 ⁻	M1	
		553 1	23 5	2889.0			
		647 1	9 5	2795.2	21/2 ⁺		
		1438 1	100 3	2004.0	19/2 ⁺	E1	
3537.0	21/2 ⁻	741.6 9	12 6	2795.2	21/2 ⁺	E1	
		1533.1 3	100 3	2004.0	19/2 ⁺	E1	
3646.2	23/2 ⁻	109.2 5	4 2	3537.0	21/2 ⁻	M1	
		203.9 1	100 3	3442.2	21/2 ⁻	M1	
		851.2 3	30 10	2795.2	21/2 ⁺	E1	
3742.6	(17/2 to 23/2)	948.1 3	100	2795.2	21/2 ⁺		
3752.0		469 1	100 5	3283.3	19/2 ⁻		
		1748 1	52 20	2004.0	19/2 ⁺		
3852.4		1532.8 2	100	2320.2	(17/2,19/2,21/2) ⁺		
3853.0	23/2 ⁻	315.7 1	100	3537.0	21/2 ⁻	M1	
4039.2	25/2 ⁻	393.03 2	100	3646.2	23/2 ⁻	M1	
4103.0		351 1	24 12	3752.0			
		661 1	100 5	3442.2	21/2 ⁻		
4213.0	25/2 ⁻	359.7 2	100	3853.0	23/2 ⁻	M1	
4650.6	27/2 ⁻	611.8 3	100	4039.2	25/2 ⁻	M1	
4723.0	27/2 ⁻	509.7 3	100	4213.0	25/2 ⁻	M1	
4787.0		1044 1	100	3742.6	(17/2 to 23/2)		
4890.0		676.6 5	100	4213.0	25/2 ⁻		
4902.0	29/2 ⁽⁻⁾	251.2 4	100	4650.6	27/2 ⁻	D	
5075.0		288 1	100	4787.0			
5182.7	29/2 ⁽⁻⁾	532.4 3	100	4650.6	27/2 ⁻		
		1144 1	14 7	4039.2	25/2 ⁻		
5211	29/2 ⁽⁻⁾	488.1 5	100	4723.0	27/2 ⁻		
5502		427 1	100	5075.0			
5566.0	31/2 ⁽⁻⁾	382.6 2	100 8	5182.7	29/2 ⁽⁻⁾		
		664 1	33 13	4902.0	29/2 ⁽⁻⁾		
5655	31/2 ⁽⁻⁾	444 1	100	5211	29/2 ⁽⁻⁾		
6070.0	33/2 ⁽⁻⁾	504.0 6	100	5566.0	31/2 ⁽⁻⁾		
6989	(33/2)	1333.8 7	100	5655	31/2 ⁽⁻⁾		

[†] Average from all available gammas.

Adopted Levels, Gammas (continued) $\gamma(^{107}\text{In})$ (continued)

‡ From $\alpha(\text{K})\text{exp}$ in ^{107}In IT decay for 678γ and from $^{94}\text{Mo}(^{16}\text{O},\text{p}2\text{n}\gamma)$ and DCO ratios for (HI,xn γ).

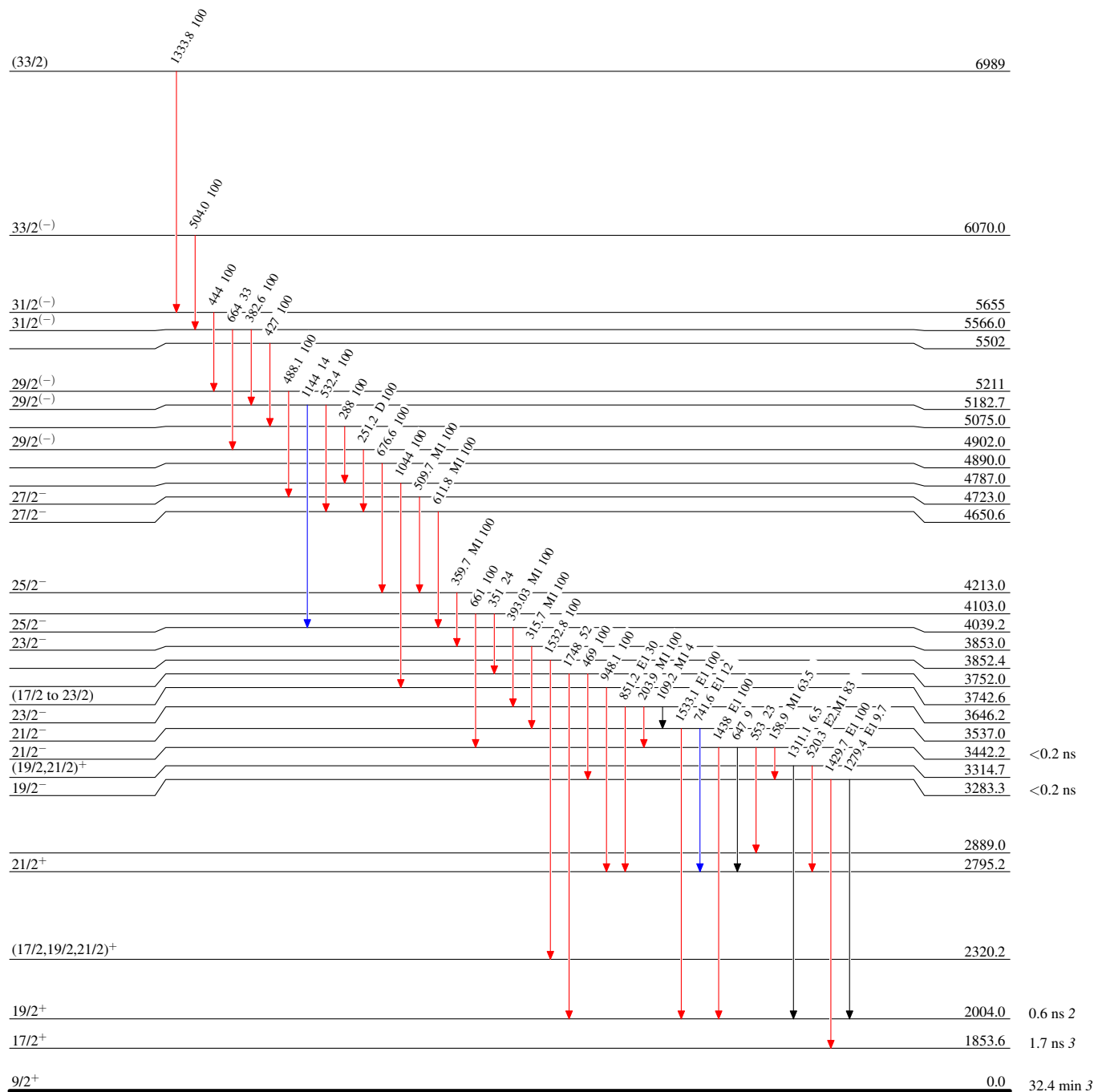
Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

Adopted Levels, Gammas**Level Scheme**

Intensities: Type not specified

Legend

-  $I_\gamma < 2\% \times I_\gamma^{\max}$
 $I_\gamma < 10\% \times I_\gamma^{\max}$
 $I_\gamma > 10\% \times I_\gamma^{\max}$

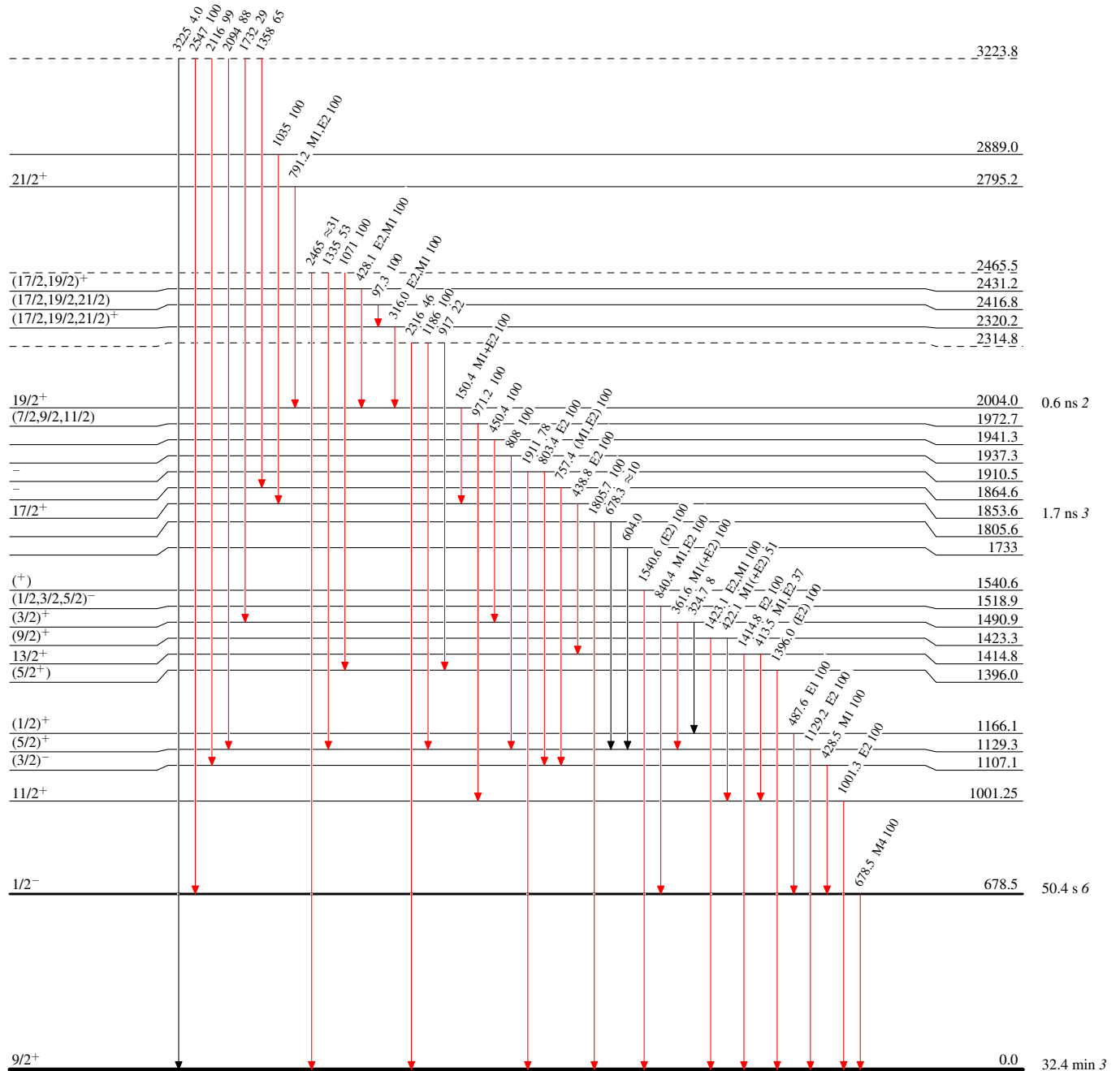


Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
→ $I_\gamma < 10\% \times I_\gamma^{\max}$
→ $I_\gamma > 10\% \times I_\gamma^{\max}$



Adopted Levels, Gammas