

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Modified	Balraj Singh	ENSDF	08-May-2015

$Q(\beta^-)=2905$ 4; $S(n)=8864$ 26; $S(p)=9917$ 4; $Q(\alpha)=-8467$ 4 [2012Wa38](#)

$S(2n)=15705$ 5, $S(2p)=23484$ 4 ([2012Wa38](#)).

No new references or data were found for ^{85}Br after the update of December 31, 2013 in ENSDF (B. Singh, May 8, 2015).

^{85}Br identified and produced in fission of uranium ([1940St03](#), [1949Su14](#)), and in the bombardment of ^{85}Kr with protons ([1943Bo01](#)). Later decay measurements of ^{85}Br decay: [1971Er15](#), [1974Gr29](#), [1975Hu02](#), [1975Nu03](#).

 ^{85}Br LevelsCross Reference (XREF) Flags

A	$^{85}\text{Se} \beta^-$ decay (32.9 s)	D	$^{208}\text{Pb}(^{18}\text{O}, X\gamma)$ E=91 MeV
B	$^{86}\text{Kr}(d, ^3\text{He})$, (pol d, ^3He)	E	$^{208}\text{Pb}(^{18}\text{O}, X\gamma)$ E=85 MeV
C	$^{192}\text{Os}(^{82}\text{Se}, X\gamma)$		

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0.0 ^{‡#}	3/2 ⁻	2.90 min 6	ABCDE	$\% \beta^- = 100$ T _{1/2} : weighted average of 3.00 min 5 (1949Su14) and 2.87 min 3 (1974Gr29 , earlier value=2.87 min 1 in 1970OsZZ). Others: 3.0 min 3 (1975Hu02), 3.0 min 5 (1940St03 , 1943Se01 , 1943Bo01). J ^π : L=1 and vector analyzing power in (d, ^3He).
344.96 ^{‡#} 14	5/2 ⁻		ABCDE	J ^π : L=3 and analyzing powers in (d, ^3He), $\Delta J=1$ γ to 3/2 ⁻ .
955.75 22	3/2 ⁻		AB	XREF: B(900). J ^π : L=1 and analyzing powers in (pol d, ^3He).
1191.2 4	1/2 ⁻		AB	XREF: B(1169). J ^π : L=1 and analyzing powers in (pol d, ^3He).
1427.08 ^{‡#} 15	(7/2 ⁻)		A DE	J ^π : $\Delta J=2$ γ to 3/2 ⁻ .
1553.13 23	(1/2 ⁻ to 7/2 ⁻)		A	J ^π : gammas to 3/2 ⁻ and 5/2 ⁻ ; absence of γ to 1/2 ⁻ level at 1191 makes 1/2 ⁻ , 3/2 and 5/2 ⁻ less likely.
1572.26 ^{‡#} 16	9/2 ⁽⁻⁾		CDE	J ^π : $\Delta J=2$ γ to 5/2 ⁻ .
1724.6 4	(3/2, 5/2, 7/2)		A	J ^π : log ft=7.1 from (5/2) ⁺ .
1795.1 5	1/2 ⁻		AB	J ^π : L=1 and analyzing powers, in (d, ^3He), possible configuration=2p _{1/2} +1f _{5/2} .
1859.34 23	(9/2 ⁺)		A DE	J ^π : $\Delta J=1$ γ to (7/2 ⁻); possible configuration= $\pi g_{9/2}^{-1}$ from systematics (2006As07 , 2015Ba14). Negative parity is expected if 1514.8 γ to 5/2 ⁻ level exists, unless the level has long half-life.
1943.7 4	(1/2 ⁻ to 7/2 ⁻)		A	J ^π : gammas to 3/2 ⁻ and 5/2 ⁻ .
2165.64 ^{‡#} 17	(11/2 ⁻)		CDE	J ^π : $\Delta J=1$ γ to (9/2 ⁻); γ to (7/2 ⁻).
2310 31	3/2 ⁻		B	J ^π : L=1 and analyzing powers in (pol d, ^3He).
2800.3 3	(5/2, 7/2)		A	J ^π : log ft=6.0, log f ^{Au} t=7.4 from (5/2) ⁺ ; γ to (9/2).
2991.6 4	(11/2 ⁺)		DE	J ^π : gammas to (9/2 ⁻) and (9/2 ⁺).
3007.8 5	(3/2, 5/2, 7/2 ⁻)		A	J ^π : log ft=6.3, log f ^{Au} t=7.7 from (5/2 ⁺); γ to 3/2 ⁻ .
3326.2 ^{‡@} 3	(13/2 ⁻)		CDE	J ^π : $\Delta J=1$ γ to (11/2 ⁻).
3401 36	7/2 ⁻		B	J ^π : L=3 and analyzing powers in (pol d, ^3He).
3421.6 3	(13/2 ⁺)		DE	J ^π : γ to (9/2 ⁺).
3539.6 5	(3/2, 5/2, 7/2 ⁻)		A	J ^π : log ft=5.9, log f ^{Au} t=7.2 from (5/2) ⁺ ; γ to 3/2 ⁻ .
3644.5 5	(3/2, 5/2, 7/2)		A	J ^π : log ft=5.9, log f ^{Au} t=7.1 from (5/2) ⁺ .
3680.3 11	(3/2, 5/2, 7/2)		A	J ^π : log ft=6.4, log f ^{Au} t=7.7 from (5/2) ⁺ .
3685.5 4	(13/2 ⁺)		DE	J ^π : γ to (9/2 ⁺).
3708.3 ^{‡@} 6	(15/2 ⁻)		CDE	J ^π : $\Delta J=1$ γ to (13/2 ⁻).
3741.6 3	(3/2) ⁺		A	J ^π : log ft=5.2 from (5/2) ⁺ ; γ to 1/2 ⁻ .

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Adopted Levels, Gammas (continued) ^{85}Br Levels (continued)

E(level) [†]	J ^π	XREF	Comments
3824.4 4	(3/2,5/2 ⁻)	A	J ^π : log ft=5.9, log f ^{lu} t=7.2 from (5/2) ⁺ ; γ to 1/2 ⁻ .
3856.2 4	(15/2 ⁺)	CDE	E(level): level is shown populated in ($^{82}\text{Se},\text{X}\gamma$), but 864.5γ is seen in this reaction and placed from a level not adopted here. J ^π : gammas to (13/2 ⁺) and (11/2 ⁺).
3955.7 5	(15/2)	DE	J ^π : γ to (11/2 ⁻).
3970.2 4	(3/2,5/2,7/2) ⁺	A	J ^π : log ft=5.4 from (5/2) ⁺ .
4000.3 5	(3/2,5/2,7/2) ⁺	A	J ^π : log ft=5.4 from (5/2) ⁺ .
4028.7 4	(3/2) ⁺	A	J ^π : log ft=5.1 from (5/2) ⁺ ; γ to 1/2 ⁻ .
4118.8 5	(3/2,5/2,7/2) ⁺	A	J ^π : log ft=5.3 from (5/2) ⁺ .
4172.2 10	(3/2,5/2,7/2)	A	J ^π : log ft=5.8, log f ^{lu} t=6.9 from (5/2) ⁺ .
4299.2 5	(3/2,5/2,7/2) ⁺	A	J ^π : log ft=5.6 from (5/2) ⁺ .
4341.9 ^{‡@} 7	(17/2 ⁻)	CDE	J ^π : γ to (15/2 ⁻), band member.
4440.3 4	(17/2 ⁺)	DE	J ^π : gammas to (15/2 ⁺) and (13/2 ⁺).
4510.8 6	(3/2,5/2,7/2 ⁻)	A	J ^π : log ft=5.8, log f ^{lu} t=6.7 from (5/2) ⁺ ; γ to 3/2 ⁻ .
4657.7 4	(17/2 ⁺)	DE	J ^π : gammas to (17/2 ⁺) and (13/2 ⁺).
4678.7 4	(17/2 ⁺)	DE	J ^π : γ to (13/2 ⁺).
4907.6 4	(19/2 ⁺)	DE	J ^π : γ to (17/2 ⁺).
5114.1 [@] 8	(19/2 ⁻)	E	J ^π : γ to (17/2 ⁻).
5390.6 11	(21/2)	E	J ^π : γ to (19/2 ⁺).

[†] From least-squares fit to Ey data.[‡] Yrast structure.

Band(A): γ cascade based on g.s..

@ Band(B): γ cascade based on (13/2⁻).γ(^{85}Br)

E _i (level)	J _i ^π	E _γ	I _γ	E _f	J _f ^π	Mult.	α [‡]	Comments
344.96	5/2 ⁻	344.9 [†] 2	100	0.0	3/2 ⁻	(M1)	0.00464	Mult.: ΔJ=1, dipole from γ(θ); ΔJ ^π gives M1.
955.75	3/2 ⁻	609.8 5	66 8	344.96	5/2 ⁻			
		956.2 3	100 15	0.0	3/2 ⁻			
1191.2	1/2 ⁻	1191.2 4	100	0.0	3/2 ⁻			
1427.08	(7/2 ⁻)	1082.1 4	37 5	344.96	5/2 ⁻			
		1427.0 2	100 10	0.0	3/2 ⁻	Q		
1553.13	(1/2 ⁻ to 7/2 ⁻)	597.4 5	30 3	955.75	3/2 ⁻			
		1207.9 4	100 15	344.96	5/2 ⁻			
		1552.8 5	19 5	0.0	3/2 ⁻			
1572.26	9/2 ⁽⁻⁾	1227.3 1	100	344.96	5/2 ⁻	Q		
1724.6	(3/2,5/2,7/2)	1724.5 5	100	0.0	3/2 ⁻			
1795.1	1/2 ⁻	840.9 21	100 22	955.75	3/2 ⁻			
		1450.1 8	62 10	344.96	5/2 ⁻			
		1795.3 8	30 8	0.0	3/2 ⁻			
1859.34	(9/2 ⁺)	432.3 2	100 17	1427.08	(7/2 ⁻)	D		
		1514.8 [#] 10	<7	344.96	5/2 ⁻	[M2]		
1943.7	(1/2 ⁻ to 7/2 ⁻)	987.9 5	100 13	955.75	3/2 ⁻			
		1599.0 10	55 8	344.96	5/2 ⁻			
		1944.0 9	63 11	0.0	3/2 ⁻			
2165.64	(11/2 ⁻)	593.4 1	100 10	1572.26	9/2 ⁽⁻⁾	D		
		738.5 2	40 8	1427.08	(7/2 ⁻)			

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Adopted Levels, Gammas (continued)

$\gamma(^{85}\text{Br})$ (continued)						
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.
2800.3	(5/2, 7/2)	941.1 4	100 15	1859.34	(9/2 ⁺)	
		1246.9 5	62 20	1553.13	(1/2 ⁻ to 7/2 ⁻)	
		1373.4 4	60 18	1427.08	(7/2 ⁻)	
		2455.1 6	87 13	344.96	5/2 ⁻	
2991.6	(11/2 ⁺)	1132.2 4	100 20	1859.34	(9/2 ⁺)	
		1419.3 5	41 13	1572.26	9/2 ⁽⁻⁾	
3007.8	(3/2, 5/2, 7/2 ⁻)	3007.7 5	100	0.0	3/2 ⁻	
3326.2	(13/2 ⁻)	1160.6 2	100	2165.64	(11/2 ⁻)	D
3421.6	(13/2 ⁺)	1562.3 2	100	1859.34	(9/2 ⁺)	
3539.6	(3/2, 5/2, 7/2 ⁻)	2584.3 8	100 15	955.75	3/2 ⁻	
		3539.3 5	70 8	0.0	3/2 ⁻	
3644.5	(3/2, 5/2, 7/2)	1701.0 5	100 15	1943.7	(1/2 ⁻ to 7/2 ⁻)	
		2091.2 5	33 9	1553.13	(1/2 ⁻ to 7/2 ⁻)	
3680.3	(3/2, 5/2, 7/2)	2724.5 10	100	955.75	3/2 ⁻	
3685.5	(13/2 ⁺)	1826.1 5	100	1859.34	(9/2 ⁺)	
3708.3	(15/2 ⁻)	382.2 20	100	3326.2	(13/2 ⁻)	D
3741.6	(3/2) ⁺	2550.2 5	22 3	1191.2	1/2 ⁻	
		3396.6 4	100 15	344.96	5/2 ⁻	
		3741.4 5	9.3 13	0.0	3/2 ⁻	
		2029.4 5	100 23	1795.1	1/2 ⁻	
3824.4	(3/2, 5/2 ⁻)	3479.3 4	68 14	344.96	5/2 ⁻	
		434.4 3	37 15	3421.6	(13/2 ⁺)	
3856.2	(15/2 ⁺)	864.5 3	100 33	2991.6	(11/2 ⁺)	
3955.7	(15/2)	1790.1 5	100	2165.64	(11/2 ⁻)	
3970.2	(3/2, 5/2, 7/2) ⁺	2245.6 5	≈13	1724.6	(3/2, 5/2, 7/2)	
		2417.3 5	100 15	1553.13	(1/2 ⁻ to 7/2 ⁻)	
		2542.9 5	≈33	1427.08	(7/2 ⁻)	
		3625.2 9	48 8	344.96	5/2 ⁻	
4000.3	(3/2, 5/2, 7/2) ⁺	2446.9 5	12 9	1553.13	(1/2 ⁻ to 7/2 ⁻)	
		3655.9 9	100 16	344.96	5/2 ⁻	
4028.7	(3/2) ⁺	2234.4 14	100 16	1795.1	1/2 ⁻	
		2304.0 6	19 5	1724.6	(3/2, 5/2, 7/2)	
		2601.5 4	50 8	1427.08	(7/2 ⁻)	
		3683.8 9	78 13	344.96	5/2 ⁻	
4118.8	(3/2, 5/2, 7/2) ⁺	2565.4 5	33 6	1553.13	(1/2 ⁻ to 7/2 ⁻)	
		3774.5 8	100 16	344.96	5/2 ⁻	
4172.2	(3/2, 5/2, 7/2)	3827.1 10	100	344.96	5/2 ⁻	
4299.2	(3/2, 5/2, 7/2) ⁺	2871.9 5	≈82	1427.08	(7/2 ⁻)	
		3954.8 9	100 18	344.96	5/2 ⁻	
4341.9	(17/2 ⁻)	633.6 2	100	3708.3	(15/2 ⁻)	
4440.3	(17/2 ⁺)	583.9 3	100 30	3856.2	(15/2 ⁺)	
		1018.8 3	69 21	3421.6	(13/2 ⁺)	
4510.8	(3/2, 5/2, 7/2 ⁻)	3555.0 5	100	955.75	3/2 ⁻	
4657.7	(17/2 ⁺)	217.1 3	100 25	4440.3	(17/2 ⁺)	
		702.0 10	<38	3955.7	(15/2)	
		949.4 5	77 25	3708.3	(15/2 ⁻)	
		972.5 5	92 34	3685.5	(13/2 ⁺)	
4678.7	(17/2 ⁺)	993.0 5	72 25	3685.5	(13/2 ⁺)	
		1257.1 5	100 25	3421.6	(13/2 ⁺)	
4907.6	(19/2 ⁺)	228.8 3	30 8	4678.7	(17/2 ⁺)	
		249.75 25	100 21	4657.7	(17/2 ⁺)	
		467.9 4	14 4	4440.3	(17/2 ⁺)	
5114.1	(19/2 ⁻)	772.2 5	100	4341.9	(17/2 ⁻)	
5390.6	(21/2)	483 1	100	4907.6	(19/2 ⁺)	

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Adopted Levels, Gammas (continued)

 $\gamma(^{85}\text{Br})$ (continued)

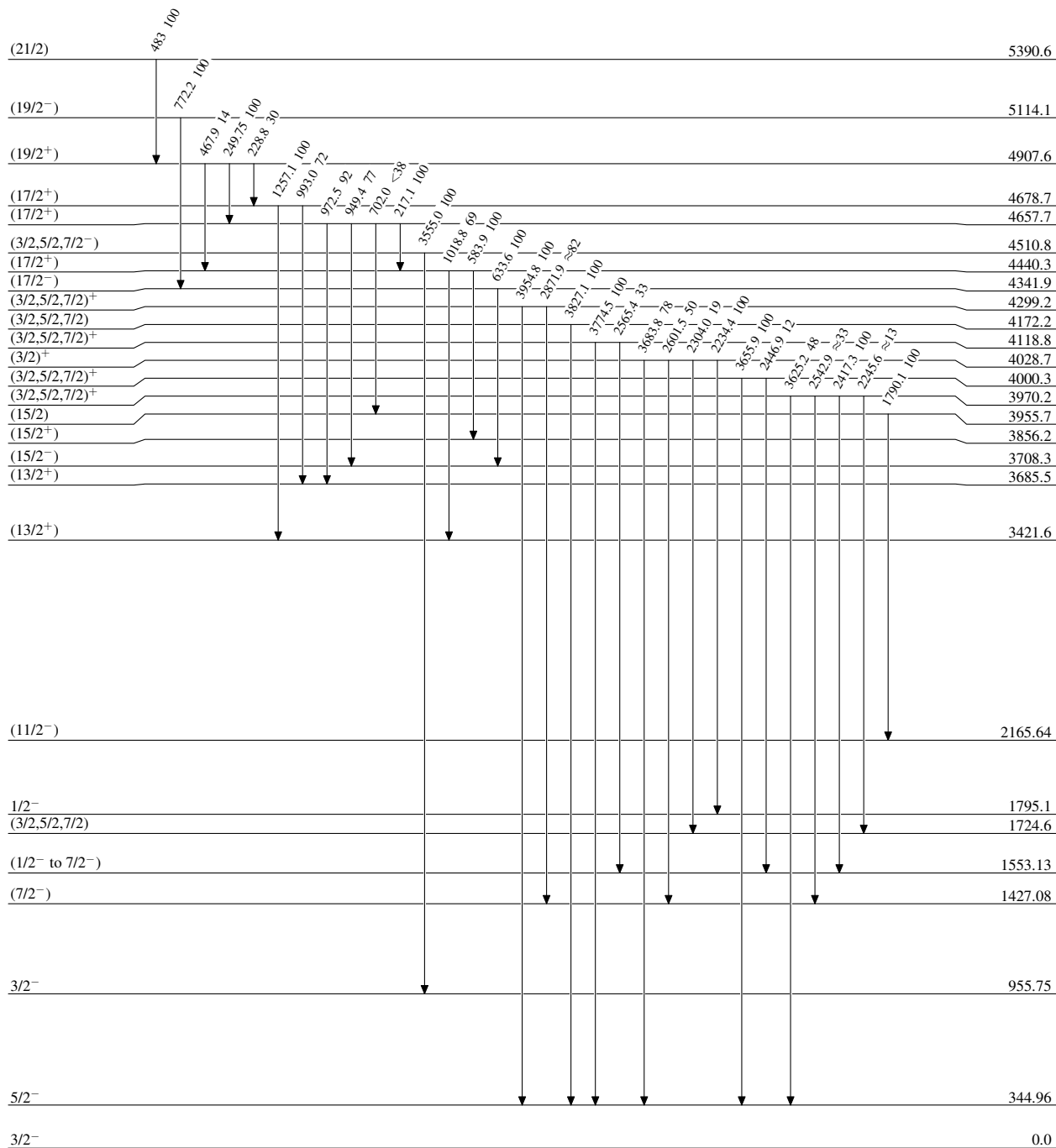
[†] Unweighted average of all values available; weighted average (or LWM average) is 344.8 2 but with large reduced $\chi^2=8.8$.

[‡] 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, GammasLevel Scheme

Intensities: Relative photon branching from each level

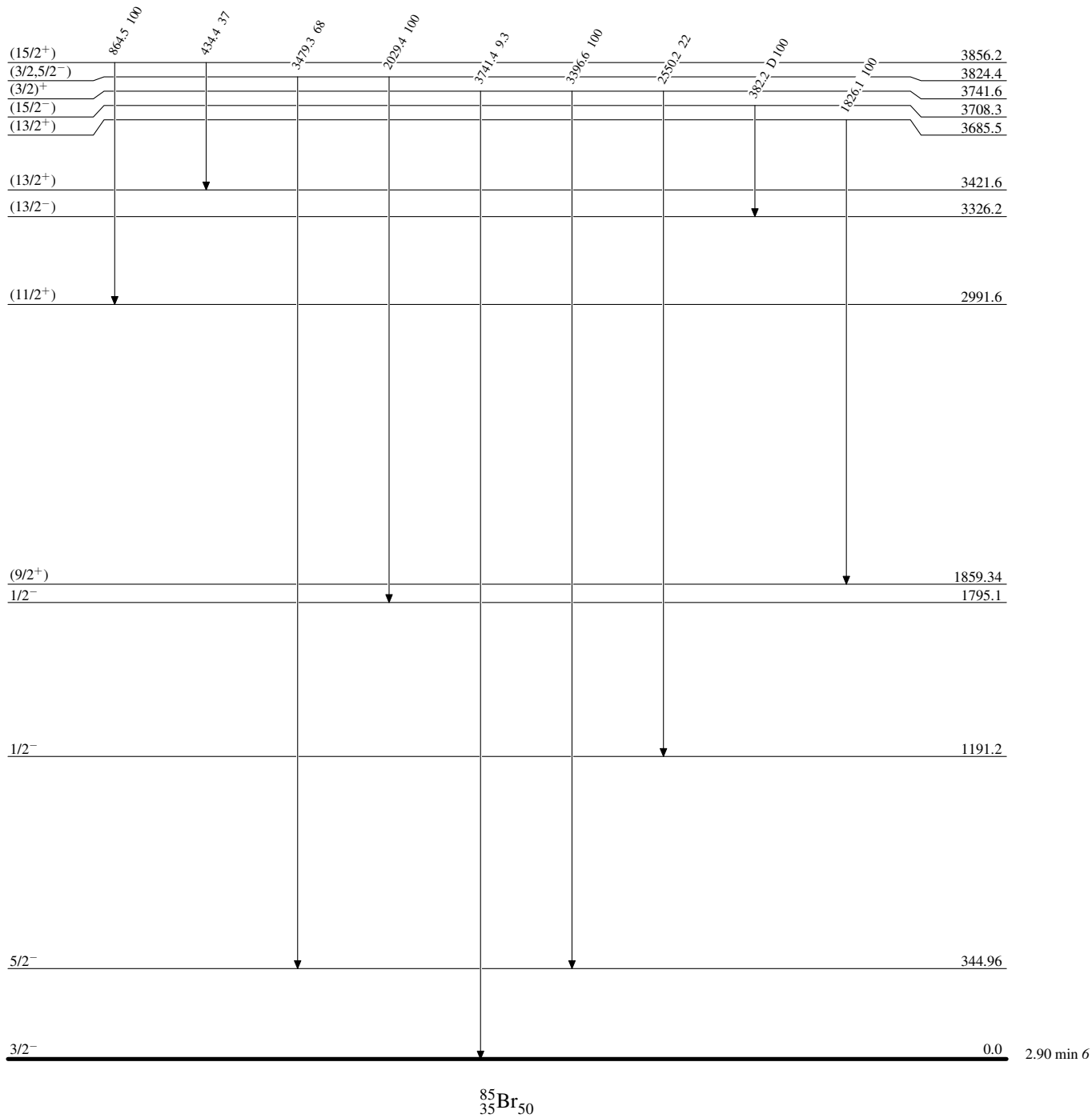


2.90 min 6

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

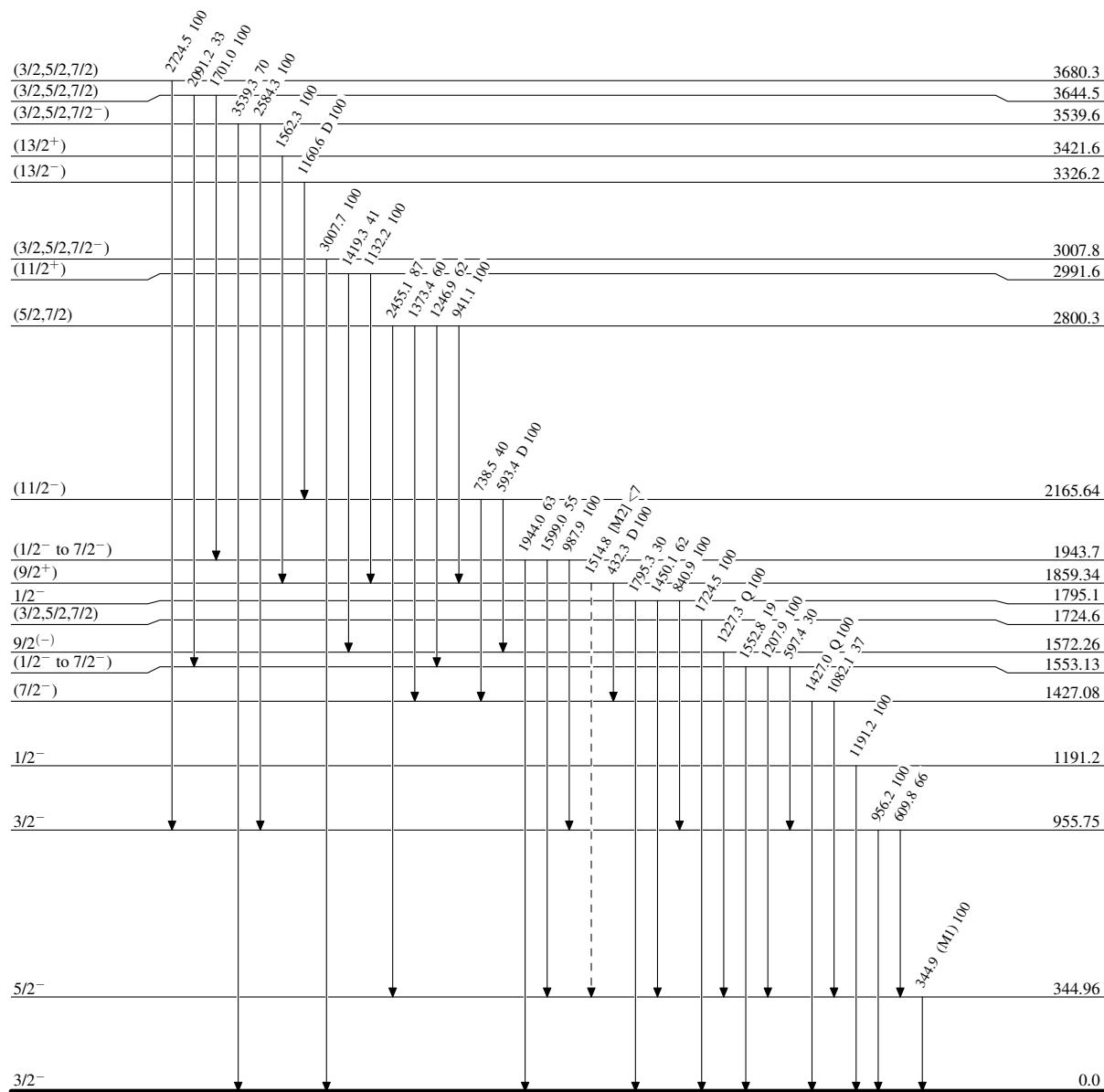


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain) $^{85}_{35}\text{Br}_{50}$

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Adopted Levels, Gammas

