

Adopted Levels, Gammas

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

$Q(\beta^-)=3003$ 15; $S(n)=5609$ 10; $S(p)=11374$ 15; $Q(\alpha)=-5319$ 13 [2012Wa38](#)
 Note: Current evaluation has used the following Q record 2.94E3 12 5.67e+3121.144e+413-5.50e+314 [2003Au03](#).

 ^{107}Ru LevelsCross Reference (XREF) Flags

A ^{107}Tc β^- decay (21.2 s)
B ^{252}Cf SF decay
C $^{176}\text{Yb}(^{23}\text{Na},\text{F}\gamma)$

E(level) [†]	J $\pi^{\ddagger}$	T _{1/2}	XREF	Comments
0.0 [#]	(5/2) ⁺	3.75 min 5	AB	$\% \beta^- = 100$ J^π : (5/2) ⁺ is consistent with $\log ft = 5.77$ 9 to 7/2 ⁺ , ^{107}Rh g.s. with negligible branching to 9/2 ⁺ first excited state; 1979St24 suggest 3/2 ⁺ from systematics with ^{103}Ru , ^{105}Ru g.s. T _{1/2} : from (194 γ ,374 γ ,406 γ ,848 γ) decay curves (1978Fr16) semi. Others: 3.6 min 1 (194 γ ,406 γ)-decay curves (1969WiZX), 4.2 min 3 (1962Pi02).
102.681 22		10.8 ns 5	AB	T _{1/2} : from $\beta\gamma(t)$ (1995Sc24).
106.307 22		33.4 ns 10	A	J^π : $J^\pi=(5/2^-)$ in SF decay but $\pi=+$ in β^- decay.
142.101 23			AB	T _{1/2} : from $\beta\gamma(t)$ (1995Sc24); others: 65 ns 7 (1979St24), 34 ns 10 (1974ClZX).
177.024 21		1.00 ns 7	A	J^π : $J^\pi=(7/2^-)$ in SF decay but $\pi=+$ in β^- decay.
199.71 [@] 6	(7/2) ⁺		AB	T _{1/2} : from $\beta\gamma(t)$ (1995Sc24).
250.56 ^a 6	(9/2) ⁻		AB	
291.46 4			A	
301.3 ^{&} 6	(11/2) ⁻		BC	
322.57 4			A	
360.32 5			A	
428.46 [#] 8	(9/2) ⁺		AB	
460.87 5			A	
470.89 7			A	
490.95 6			A	
492.50 7		0.53 ns 31	A	T _{1/2} : from $\beta\gamma(t)$ (1995Sc24).
561.35 5		0.17 ns 9	A	T _{1/2} : from $\beta\gamma(t)$ (1995Sc24).
582.46 6			A	
585.94 5			A	
631.95 ^a 6	(13/2) ⁻		AB	
672.2 ^{&} 4	(15/2) ⁻		BC	
676.78 [@] 20	(11/2) ⁺		B	
698.37 7			A	
713.71 8			A	
741.42 7			A	
807.25 8			A	
825.94 6			A	
894.06 6			A	
900.23 6			A	
923.20 5			A	
957.09 8			A	
957.77 [#] 23	(13/2) ⁺		B	

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

E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF
1076.20 7		A	1555.22 11		A	2555.92 22		A
1162.49 9		A	1679.58 12		A	2557.8 [@] 11	(23/2 ⁺)	B
1203.6 ^a 3	(17/2 ⁻)	B	1757.33 6		A	2679.68 12		A
1225.3 ^{&} 5	(19/2 ⁻)	B	1844.77 22		A	2785.2 ^a 5	(25/2 ⁻)	B
1241.5 [@] 3	(15/2 ⁺)	B	1870.1 [@] 5	(19/2 ⁺)	B	2786.8 ^{&} 12	(27/2 ⁻)	B
1284.20 6		A	1930.2 ^a 4	(21/2 ⁻)	B	2884.0 [#] 9	(25/2 ⁺)	B
1486.29 6		A	1936.7 ^{&} 11	(23/2 ⁻)	B	3315.1 [@] 12	(27/2 ⁺)	B
1551.2 [#] 8	(17/2 ⁺)	B	2189.8 [#] 8	(21/2 ⁺)	B	3765.2 ^{&} 12	(31/2 ⁻)	B

[†] Level energy from least-squares adjustment.[‡] From SF decay. Collective bands are connected by $\Delta J=2$, E2 transitions (2002Zh02).# Band(A): (5/2⁺) band, $\alpha=+1/2$.@ Band(a): (5/2⁺) band, $\alpha=-1/2$.& Band(B): h_{11/2} band, $\alpha=-1/2$.^a Band(C): (9/2⁻) band, $\alpha=+1/2$. $\gamma(^{107}\text{Ru})$

E _i (level)	J ^π _i	E _γ [‡]	I _γ [†]	E _f	J ^π _f	Mult. [‡]	δ	α [#]	Comments
102.681		102.70 3	100	0.0	(5/2) ⁺	M1+E2	1.0 2	0.75 9	
106.307		106.31 3	100	0.0	(5/2) ⁺	M1+E2	>1.0	0.87 21	B(M1)(W.u.)=2.9×10 ⁻⁵ +53-21; B(E2)(W.u.)=8.7 +10-25
142.101		39.44 3	11.7 24	102.681		M1+E2	1.6 3	27.9 17	
		142.07 3	100 10	0.0	(5/2) ⁺	[M1,E2]		0.24 13	
177.024		70.71 3	13.8 21	106.307		(M1+E2)	≤0.36	1.03 23	
		177.00 3	100 8	0.0	(5/2) ⁺				
199.71	(7/2 ⁺)	199.7 1	100	0.0	(5/2) ⁺				
250.56	(9/2 ⁻)	108.5 1	100 17	142.101		(E2)		0.98	
		147.9 1	17 6	102.681					
291.46		114.5 1	14 2	177.024					
		185.2 1	16 2	106.307					
		188.8 1	9.8 10	102.681					
		291.5 1	100 10	0.0	(5/2) ⁺				
301.3	(11/2 ⁻)	(50.6 2)		250.56	(9/2 ⁻)				
		159.4 3	100	142.101					
322.57		145.55 3	100 9	177.024					
		216.3 1	17 2	106.307					
		322.5 1	52 5	0.0	(5/2) ⁺				
360.32		183.3 1	3.7 7	177.024					
		257.7 1	2.7 7	102.681					
		360.3 1	100 12	0.0	(5/2) ⁺				
428.46	(9/2 ⁺)	228.9 1	100 9	199.71	(7/2 ⁺)				
		428.3 1	100 37	0.0	(5/2) ⁺				
460.87		138.5 1	12 3	322.57					
		169.3 1	8.4 16	291.46					
		354.5 1	100 10	106.307					
		460.9 1	22 3	0.0	(5/2) ⁺				
470.89		271.2 1	70 21	199.71	(7/2 ⁺)				
		470.8 1	100 24	0.0	(5/2) ⁺				
490.95		291.2 1	13 4	199.71	(7/2 ⁺)				
		314.0 1	33 2	177.024					

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Adopted Levels, Gammas (continued)

$\gamma(^{107}\text{Ru})$ (continued)					
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π
490.95		490.9 1	100 23	0.0	(5/2) ⁺
492.50		315.4 1	64 7	177.024	
		386.3 1	100 9	106.307	
561.35		419.2 1	8 2	142.101	
		458.7 1	100 9	102.681	
582.46		291.1 1	11 3	291.46	
		382.6 1	46 6	199.71	(7/2) ⁺
		479.8 1	11 3	102.681	
		582.5 1	100 11	0.0	(5/2) ⁺
585.94		335.4 1	100 10	250.56	(9/2) ⁻
		443.9 1	48 11	142.101	
		483.4 1	5.4 16	102.681	
		585.8 1	8.5 8	0.0	(5/2) ⁺
631.95	(13/2) ⁻	489.8 1	100 22	142.101	
		529.1 1	50 5	102.681	
672.2	(15/2) ⁻	370.9 3	75	301.3	(11/2) ⁻
676.78	(11/2) ⁺	248.2 3	13	428.46	(9/2) ⁺
		477.2 3	30	199.71	(7/2) ⁺
713.71		536.4 1	100 9	177.024	
		714.0 1	24 5	0.0	(5/2) ⁺
741.42		180.1 1	35 12	561.35	
		635.1 1	100 10	106.307	
		638.7 1	65 8	102.681	
807.25		556.7 1	29 11	250.56	(9/2) ⁻
		665.1 1	100 29	142.101	
		704.5 3	37 6	102.681	
		807.7 3	55 6	0.0	(5/2) ⁺
825.94		465.7 1	71 17	360.32	
		534.5 1	91 23	291.46	
		648.9 1	66 6	177.024	
		722.7 3	100 31	102.681	
		825.9 1	20 3	0.0	(5/2) ⁺
894.06		195.7 1	37 14	698.37	
		423.1 1	100 34	470.89	
		533.1 3	57 24	360.32	
		751.9 1	100 10	142.101	
900.23		540.0 1	53 7	360.32	
		577.5 1	28 3	322.57	
		723.1 1	100 35	177.024	
		900.4 1	28 3	0.0	(5/2) ⁺
923.20		337.3 1	100 11	585.94	
		562.8 1	17 6	360.32	
		746.1 1	49 5	177.024	
		≈820.5	22 3	102.681	
		923.3 1	6.1 16	0.0	(5/2) ⁺
957.09		665.7 1	38 13	291.46	
		850.7 1	100 28	106.307	
957.77	(13/2) ⁺	281.0 3	18	676.78	(11/2) ⁺
		529.3 3	100	428.46	(9/2) ⁺
1076.20		378.0 1	82 9	698.37	
		514.7 1	82 7	561.35	
		969.4 3	100 7	106.307	
		973.6 3	30 7	102.681	
		1076.0 3	16 4	0.0	(5/2) ⁺
1162.49		530.5 1	57 16	631.95	(13/2) ⁻
		576.6 1	100 32	585.94	

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

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π
1203.6	(17/2 ⁻)	531.4 3	3	672.2	(15/2 ⁻)
		571.6 3	22	631.95	(13/2 ⁻)
1225.3	(19/2 ⁻)	553.1 3	100	672.2	(15/2 ⁻)
1241.5	(15/2 ⁺)	283.7 3	18	957.77	(13/2 ⁺)
		564.7 3	100	676.78	(11/2 ⁺)
1284.20		360.8 1	23 10	923.20	
		652.1 1	100 10	631.95	(13/2 ⁻)
		723.0 1	43 10	561.35	
		1284.4 1	35 5	0.0	(5/2 ⁺)
1486.29		787.7 1	26 8	698.37	
		924.9 1	61 8	561.35	
		1025.5 1	35 4	460.87	
		1126.0 1	17 2	360.32	
		1380.1 1	100 17	106.307	
1551.2	(17/2 ⁺)	309.7 3	1	1241.5	(15/2 ⁺)
		593.4 3	13	957.77	(13/2 ⁺)
1555.22		856.9 3	100 7	698.37	
		993.8 3	28 3	561.35	
		1062.9 3	18 2	492.50	
		1094.2 3	21 2	460.87	
		1264.0 3	50 4	291.46	
		1378.0 3	70 7	177.024	
		1452.2 3	23 3	102.681	
		1555.4 3	13 2	0.0	(5/2 ⁺)
1679.58		603.2 3	1 3	1076.20	
		981.4 3	38 3	698.37	
		1118.1 3	73 12	561.35	
		1218.7 3	73 8	460.87	
		1388.3 3	29 4	291.46	
		1502.5 3	43 5	177.024	
		1573.2 3	100 11	106.307	
1757.33		681.1 1	52 7	1076.20	
		834.3 1	23 4	923.20	
		863.1 1	15 2	894.06	
		1264.9 3	38 4	492.50	
		1296.3 3	84 7	460.87	
		1397.1 3	62 12	360.32	
		1435.1 3	57 7	322.57	
		1465.9 3	69 7	291.46	
		1650.9 3	100 10	106.307	
		1654.6 3	34 4	102.681	
1844.77		1667.9 3	61 17	177.024	
		1741.9 3	100 13	102.681	
1870.1	(19/2 ⁺)	628.6 3	100	1241.5	(15/2 ⁺)
1930.2	(21/2 ⁻)	704.9 3	1	1225.3	(19/2 ⁻)
		726.6 3	10	1203.6	(17/2 ⁻)
1936.7	(23/2 ⁻)	711.4 3	100	1225.3	(19/2 ⁻)
2189.8	(21/2 ⁺)	638.6 3	100	1551.2	(17/2 ⁺)
2555.92		2095.0 3	29 4	460.87	
		2378.9 3	100 11	177.024	
2557.8	(23/2 ⁺)	687.7 3	100	1870.1	(19/2 ⁺)
2679.68		2118.2 3	30 4	561.35	
		2357.1 3	20 4	322.57	
		2388.5 3	20 6	291.46	
		2429.3 3	30 4	250.56	(9/2 ⁻)
		2502.3 3	100 11	177.024	

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

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>$E_\gamma^\ddagger$</u>	<u>$I_\gamma^\dagger$</u>	<u>E_f</u>	<u>J_f^π</u>
2679.68		2537.4 3	100 11	142.101	
		2577.0 3	45 4	102.681	
2785.2	(25/2 ⁻)	855.0 3	100	1930.2	(21/2 ⁻)
2786.8	(27/2 ⁻)	850.1 3	100	1936.7	(23/2 ⁻)
2884.0	(25/2 ⁺)	694.2 3	100	2189.8	(21/2 ⁺)
3315.1	(27/2 ⁺)	757.3 3	100	2557.8	(23/2 ⁺)
3765.2	(31/2 ⁻)	978.4 3	100	2786.8	(27/2 ⁻)

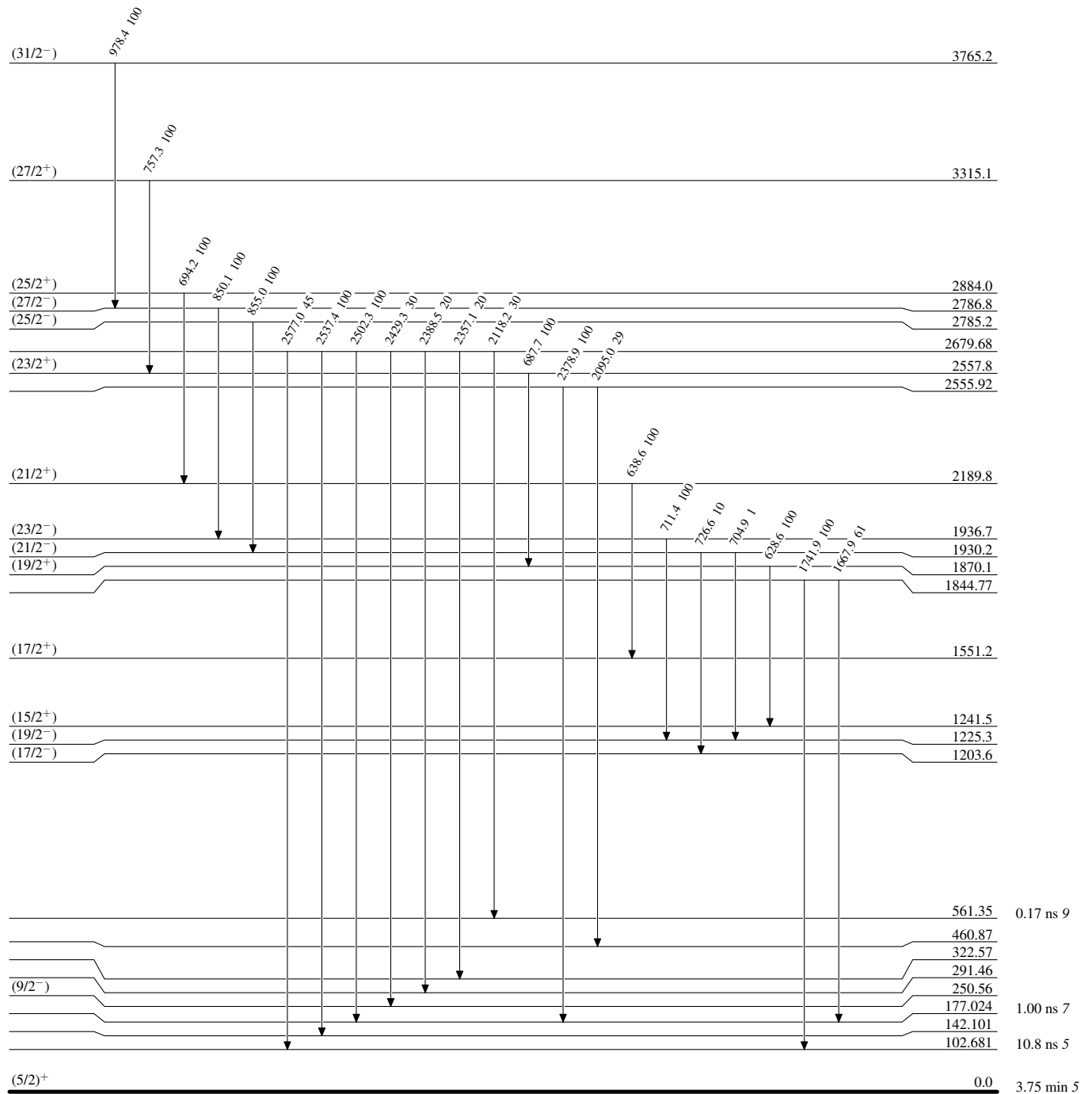
[†] Relative photon branching from each level.

[‡] From ^{107}Tc β^- decay if possible.

[#] 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.

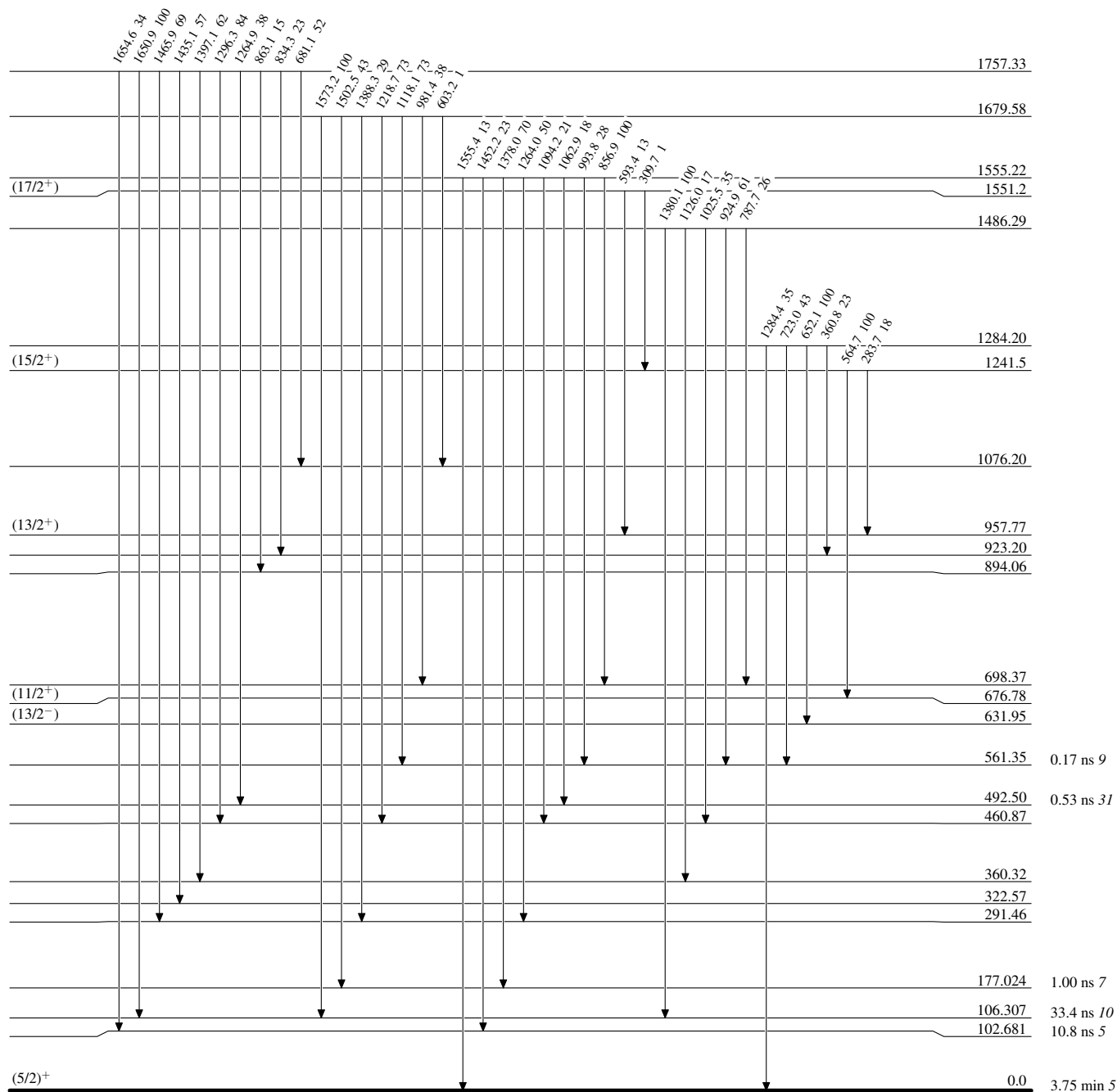
Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



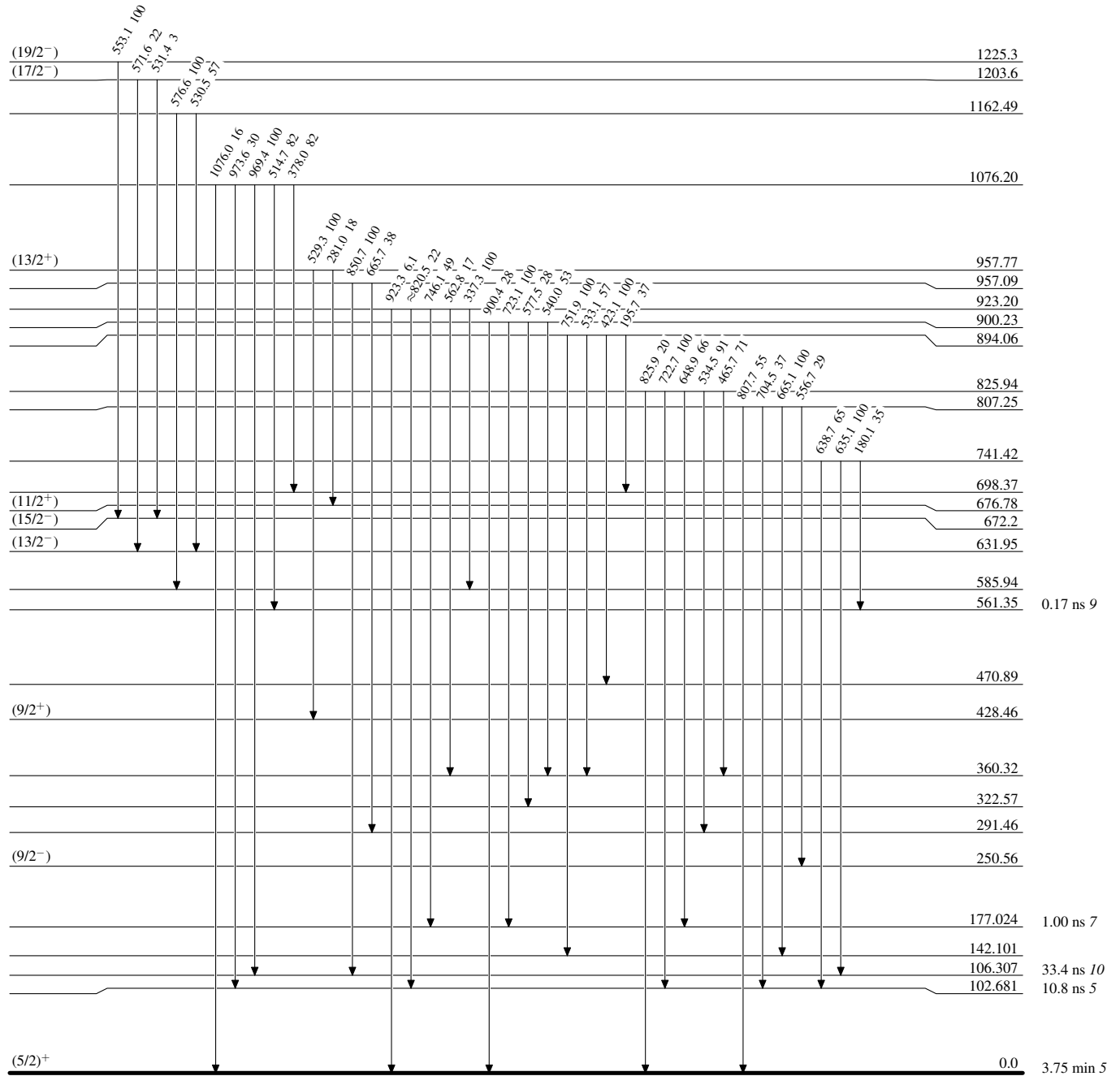
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level

 $^{107}_{44}\text{Ru}_{63}$

Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level

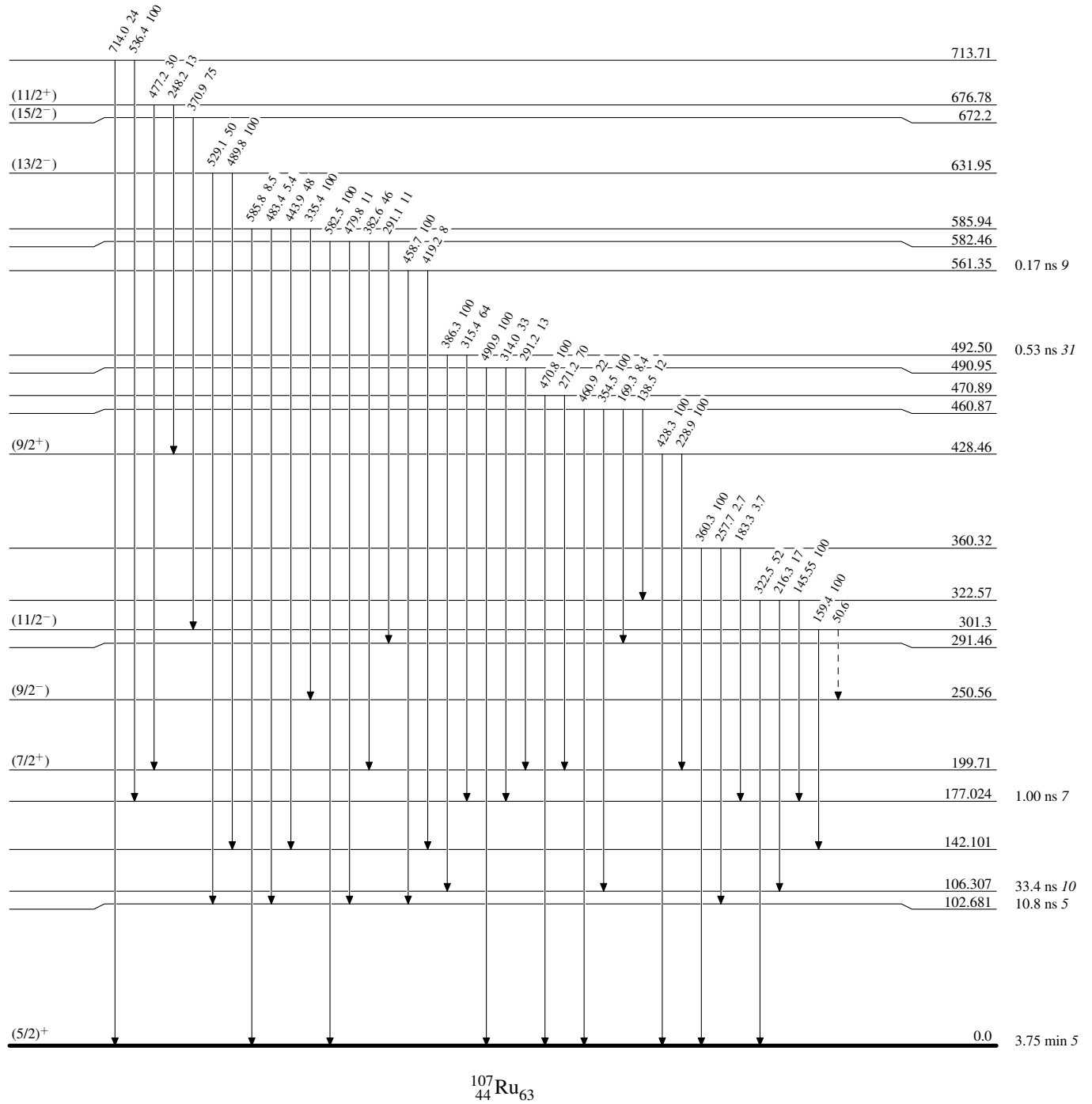


Adopted Levels, Gammas

Legend

Level Scheme (continued)

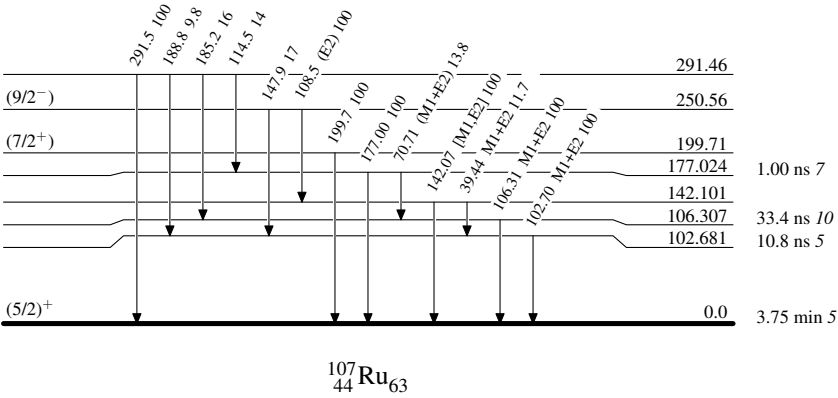
Intensities: Relative photon branching from each level

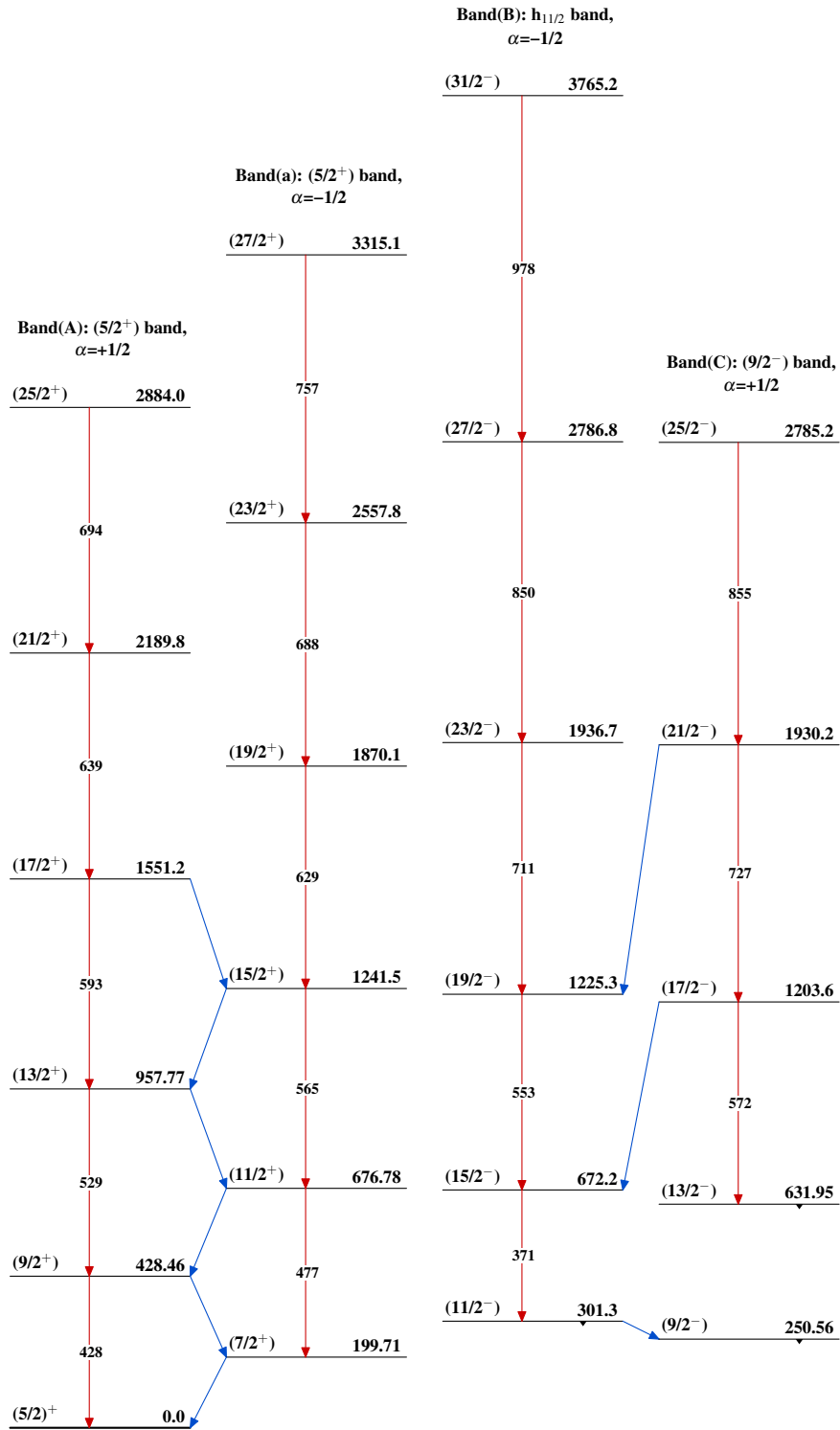
-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, Gammas $^{107}_{44}\text{Ru}_{63}$