^{109}Ru β^- decay 1987Ka29

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev	NDS 137, 1 (2016)	31-May-2016

Parent: ^{109}Ru: E=0.0; J^π=(5/2$^+$); $T_{1/2}$=34.4 s *2*; Q(β^-)=4264 *10*; %β^- decay=100.0

^{109}Ru-J^π,$T_{1/2}$: From Adopted Levels of ^{109}Ru.

^{109}Ru-Q(β^-): From 2012Wa38.

1987Ka29: Activity were produced using ^{249}Cf(n,f) E=th., ≈300 μg source, TRIGA Mainz reactor, neutron flux density 6×10^{11} neutron/cm^2. Detectors: 1 cm^3 Ge X-ray (FWHM=200 eV at 5.9 keV), 32cm^3 Ge(Li) (FWHM=1.8 keV at 1332 keV), 120cm^3 Ge(Li) (FWHM=1.9 keV at 1332 keV) .Measured: K x ray, Eγ, $T_{1/2}$, Iγ, $\gamma\gamma$, $\gamma\gamma$(t),α(K)exp.

Others: 1992PeZX, 1992Sh35, 1978Fr16.

^{109}Rh Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	Comments
0.0	7/2$^+$	80.8 s *7*	$T_{1/2}$: From Adopted Levels.
206.250 *20*	9/2$^+$	<41 ps	$T_{1/2}$: Other:<0.5 ns using β-206γ(t) in 1998Lh02 (centroid shift method).
225.873 *19*	3/2$^+$	1.66 μs *4*	$T_{1/2}$: from (116γ)(226γ)(t) in 1987Ka29.
257.66 *3*	(3/2)$^+$	28.7 ns *15*	$T_{1/2}$: from (221γ)(32γ)(t) in 1987Ka29.
358.584 *16*	3/2$^+$	114.4 ps *13*	$T_{1/2}$: Others:<0.5 ns from β-359γ(t) in 1998Lh02 (centroid shift method) and≤5 ns in 1987Ka29.
373.99 *3*	1/2$^-$	33.5 ns *14*	$T_{1/2}$: weighted average of 33 ns *2* from (194γ)(116γ)(t) in 1987Ka29 (slope method) and 34 ns *2* from β-374γ(t) in 1998Lh02 (slope method).
409.74 *3*	7/2$^+$	0.49 ns *3*	$T_{1/2}$: Other: 0.43 ns 23 from β-183.85γ(t) in 1998Lh02 (centroid shift method).
426.759 *19*	5/2$^+$	<53 ps	$T_{1/2}$: Others:<0.5 ns 427γ(t) in 1998Lh02 (centroid shift) and 8 ns 1 in 1987Ka29 (close to timing resolution of Ge(Li) detectors).
478.28 *3*	(5/2)$^+$	174 ps *5*	$T_{1/2}$: Other:<0.6 ns from β-221γ(t) in 1998Lh02 (centroid shift method).
530.66 *7*	11/2$^+$		
568.10 *4*	3/2$^-$	<0.83 ps	
623.12 *4*	5/2$^-$	223 ps *8*	
641.98 *5*	(11/2$^+$)		
671.876 *22*	(5/2)$^+$	<57 ps	
740.80 *4*	3/2$^-$	<57 ps	
855.99 *4*	5/2$^-$	<51 ps	
861.00 *8*	(9/2$^+$)		
890.23 *4*	(9/2$^+$)		
926.76 *4*	5/2$^-$	107 ps *13*	
973.29 *19*	(7/2$^-$)		
980.71 *4*	(1/2)	<69 ps	
1011.60 *4*	(3/2)$^+$		
1026.46 *3*	(5/2,7/2)$^+$		
1051.20 *5*	(1/2,3/2,5/2$^-$)	27 ps *12*	
1053.26 *4*	5/2$^+$,7/2$^+$		
1096.25 *4*	(9/2)$^+$		
1162.19 *19*	(3/2$^-$)		
1176.97 *11*	3/2$^+$,5/2,7/2$^+$		
1214.19 *16*	(3/2)$^-$		
1229.48 *7*	(7/2$^+$)		
1283.86 *6*	(7/2$^-$)		
1310.72 *3*	(3/2$^+$)	54 ps *10*	
1412.53 *9*	(1/2$^+$)		
1511.512 *25*	7/2$^+$	<23 ps	
1576.33 *4*	5/2$^+$,7/2$^+$	<80 ps	
1637.97 *17*	(3/2)$^-$		
1929.07 *3*	7/2$^+$	<32 ps	
1963.40 *5*	(5/2)$^+$	<32 ps	

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^{109}Ru β^- decay 1987Ka29 (continued)

^{109}Rh Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	E(level)†	Jπ‡	$T_{1/2}$#	E(level)†	Jπ‡
1971.87 *12*	$(5/2)^+$		2117.00 *12*	$(3/2^+)$		2208.45 *8*	$(5/2^+,7/2)$
2015.41 *8*	(3/2)		2182.87 *10*	$(5/2^+,7/2)$		2209.40 *10*	$(3/2^+,5/2)$
2045.54 *15*	$(3/2)^-$		2184.72 *7*	$(3/2^+,5/2)$		2237.92 *10*	$(3/2^+,5/2)$
2093.91 *4*	$(3/2^+)$	<40 ps	2190.50 *7*	$(3/2^+)$	<40 ps	2247.07 *14*	$(5/2^+,7/2)$
2098.59 *12*	$(5/2^+,7/2)$		2193.74 *11*	$(3/2^+,5/2)$		2270.1 *3*	$(5/2^+,7/2)$

† From a least-squares fit to Eγ energies.
‡ From Adopted Levels.
# From βγγ(t) in 2011BuZZ, unless otherwise stated.

β^- radiations

The decay scheme is incomplete (pandemonium). This is particularly evident from the low feeding intensities to the 225-, 258- and 359-keV levels. Thus, the Iβ and log *ft* values are tentative.

E(decay)	E(level)	Iβ−†‡	Log *ft*	Comments
(1994 *10*)	2270.1	0.12 *4*	6.98 *15*	av Eβ=787.8 *46*
(2017 *10*)	2247.07	1.03 *19*	6.07 *8*	av Eβ=798.3 *46*
(2026 *10*)	2237.92	0.59 *7*	6.32 *6*	av Eβ=802.4 *46*
(2055 *10*)	2209.40	0.50 *7*	6.42 *7*	av Eβ=815.4 *46*
(2056 *10*)	2208.45	0.84 *8*	6.19 *5*	av Eβ=815.9 *46*
(2070 *10*)	2193.74	0.9 *3*	6.18 *15*	av Eβ=822.7 *46*
(2074 *10*)	2190.50	2.3 *3*	5.77 *6*	av Eβ=824.1 *46*
(2079 *10*)	2184.72	2.16 *21*	5.80 *5*	av Eβ=826.8 *46*
(2081 *10*)	2182.87	0.70 *17*	6.29 *11*	av Eβ=827.7 *46*
(2147 *10*)	2117.00	1.37 *12*	6.06 *4*	av Eβ=857.9 *46*
(2165 *10*)	2098.59	1.47 *18*	6.04 *6*	av Eβ=866.4 *46*
(2170 *10*)	2093.91	9.9 *7*	5.22 *4*	av Eβ=868.5 *46*
(2218 *10*)	2045.54	0.63 *6*	6.45 *5*	av Eβ=890.8 *47*
(2249 *10*)	2015.41	1.37 *14*	6.14 *5*	av Eβ=904.7 *47*
(2292 *10*)	1971.87	2.3 *4*	5.95 *8*	av Eβ=924.8 *47*
(2301 *10*)	1963.40	9.5 *8*	5.34 *4*	av Eβ=928.7 *47*
				E(decay): E=2295 *210* (1989Gr23).
(2335 *10*)	1929.07	19.9 *13*	5.05 *3*	av Eβ=944.6 *47*
				E(decay): E=2280 *80* (1989Gr23).
(2626 *10*)	1637.97	0.06 *4*	7.8 *3*	av Eβ=1079.9 *47*
(2688 *10*)	1576.33	2.11 *17*	6.28 *4*	av Eβ=1108.7 *47*
(2752 *10*)	1511.512	8.8 *7*	5.70 *4*	av Eβ=1139.1 *47*
				E(decay): E=2600 *110* (1989Gr23).
(2953 *10*)	1310.72	0.24 *10*	7.39 *19*	av Eβ=1233.3 *47*
(2980 *10*)	1283.86	1.42 *14*	6.64 *5*	av Eβ=1245.9 *47*
(3035 *10*)	1229.48	0.58 *7*	7.06 *6*	av Eβ=1271.5 *47*
(3050 *10*)	1214.19	0.08 *6*	7.9 *4*	av Eβ=1278.7 *47*
(3087 *10*)	1176.97	0.19 *8*	7.58 *19*	av Eβ=1296.2 *48*
(3102 *10*)	1162.19	0.10 *7*	7.9 *3*	av Eβ=1303.2 *48*
(3211 *10*)	1053.26	3.3 *3*	6.41 *4*	av Eβ=1354.6 *48*
(3213 *10*)	1051.20	0.24 *11*	7.55 *20*	av Eβ=1355.5 *48*
(3238 *10*)	1026.46	5.5 *5*	6.20 *4*	av Eβ=1367.2 *48*
				E(decay): E=3100 *110* (1989Gr23).
(3252 *10*)	1011.60	0.67 *18*	7.12 *12*	av Eβ=1374.3 *48*
(3291 *10*)	973.29	0.18 *6*	7.72 *15*	av Eβ=1392.3 *48*

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^{109}Ru β^- decay 1987Ka29 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(3337 *10*)	926.76	0.55 *9*	7.26 *8*	av Eβ=1414.3 *48*
(3408 *10*)	855.99	0.27 *16*	7.6 *3*	av Eβ=1447.8 *48*
(3523 *10*)	740.80	0.31 *19*	7.6 *3*	av Eβ=1502.3 *48*
(3592 *10*)	671.876	1.0 *4*	7.14 *18*	av Eβ=1535.0 *48*
(3641 *10*)	623.12	<0.5	>7.5	av Eβ=1558.1 *48*
(3696 *10*)	568.10	<0.4	>7.6	av Eβ=1584.2 *48*
(3786 *10*)	478.28	0.7 *4*	7.39 *25*	av Eβ=1626.9 *48*
(3837 *10*)	426.759	1.1 *9*	7.2 *4*	av Eβ=1651.4 *48*
(3854 *10*)	409.74	0.77 *13*	7.38 *8*	av Eβ=1659.5 *48*
(3890 *10*)	373.99	<0.6	>9.1[1*u*]	av Eβ=1666.8 *47*
(3905 *10*)	358.584	<1.4	>7.1	av Eβ=1683.7 *48* E(decay): E=3655 *200* (1989Gr23).
(4006 *10*)	257.66	<3	>6.9	av Eβ=1731.8 *48*
(4038 *10*)	225.873	<2.8	>6.9	av Eβ=1746.9 *48*
(4264 *10*)	0.0	8 *6*	6.6 *4*	av Eβ=1854.5 *48*

[†] Deduced by evaluators from I(γ+ce) intensity balance at each level.
[‡] Absolute intensity per 100 decays.

$\gamma(^{109}Rh)$

Iγ normalization: weighted average of 0.199 14 and 0.219 17, deduced from %γ/fission of 0.411% 10 (116.3γ) and 0.805% 40 (358.8γ) from 1969WiZX and the cumulative fission yield of 5.96% 24 for ^{109}Ru from JEFF3.1.1 data library.
Additional information 1.

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡@	α#	Comments
31.80 *3*	2.11 *12*	257.66	$(3/2)^+$	225.873	$3/2^+$	M1+E2	0.60 *9*	29 *5*	α(K)=13.6 *12*; α(L)=12 *3*; α(M)=2.4 *5* α(N)=0.36 *8*; α(O)=0.00219 *15* %Iγ=0.44 *3*, using the calculated normalization. Mult.,δ: α(exp) 29 *3* (1987Ka29), α(K)exp=13 *4* (1987Ka29) and α(K)exp= 17 *+10–6* (1992PeZX).
55.01 *3*	0.85 *7*	623.12	$5/2^-$	568.10	$3/2^-$	[M1]		1.89	α(K)=1.646 *24*; α(L)=0.203 *3*; α(M)=0.0378 *6* α(N)=0.00625 *9*; α(O)=0.000308 *5* %Iγ=0.176 *17*, using the calculated normalization.
68.07 *3*	13.4 *7*	426.759	$5/2^+$	358.584	$3/2^+$	M1		1.023	α(K)=0.890 *13*; α(L)=0.1094 *16*; α(M)=0.0204 *3* α(N)=0.00337 *5*; α(O)=0.0001668 *24* %Iγ=2.77 *20*, using the calculated normalization. Mult.: α(K)exp=0.7 *2* (1992PeZX).
101.1 *1*	0.11 *3*	358.584	$3/2^+$	257.66	$(3/2)^+$	[M1]		0.333	α(K)=0.290 *5*; α(L)=0.0353 *5*; α(M)=0.00658 *10* α(N)=0.001090 *16*; α(O)=5.42×10^{-5} *8* %Iγ=0.023 *7*, using the calculated normalization.
115.17 *5*	0.30 *15*	855.99	$5/2^-$	740.80	$3/2^-$	[M1]		0.231	α(K)=0.201 *3*; α(L)=0.0245 *4*; α(M)=0.00456 *7* α(N)=0.000756 *11*; α(O)=3.77×10^{-5} *6* %Iγ=0.06 *4*, using the calculated normalization.
116.32 *3*	34.7 *17*	373.99	$1/2^-$	257.66	$(3/2)^+$	[E1]		0.0945	α(K)=0.0826 *12*; α(L)=0.00980 *14*; α(M)=0.00181 *3* α(N)=0.000295 *5*; α(O)=1.327×10^{-5} *19* %Iγ=7.2 *5*, using the calculated normalization.
117.67 *5*	0.30 *15*	740.80	$3/2^-$	623.12	$5/2^-$	[M1]		0.218	α(K)=0.190 *3*; α(L)=0.0231 *4*; α(M)=0.00429 *6* α(N)=0.000711 *10*; α(O)=3.55×10^{-5} *5* %Iγ=0.06 *4*, using the calculated normalization.
119.60 *5*	0.68 *7*	478.28	$(5/2)^+$	358.584	$3/2^+$	[M1]		0.208	α(K)=0.181 *3*; α(L)=0.0220 *3*; α(M)=0.00410 *6* α(N)=0.000680 *10*; α(O)=3.39×10^{-5} *5* %Iγ=0.141 *16*, using the calculated normalization.
132.79 *3*	0.92 *7*	358.584	$3/2^+$	225.873	$3/2^+$	[M1]		0.1560	α(K)=0.1359 *19*; α(L)=0.01648 *23*; α(M)=0.00307 *5* α(N)=0.000508 *8*; α(O)=2.54×10^{-5} *4* %Iγ=0.190 *18*, using the calculated normalization.
148.12 *3*	0.61 *5*	373.99	$1/2^-$	225.873	$3/2^+$	[E1]		0.0472	α(K)=0.0413 *6*; α(L)=0.00486 *7*; α(M)=0.000896 *13* α(N)=0.0001466 *21*; α(O)=6.78×10^{-6} *10* %Iγ=0.126 *12*, using the calculated normalization.
172.71 *3*	2.20 *13*	740.80	$3/2^-$	568.10	$3/2^-$	[M1]		0.0763	α(K)=0.0666 *10*; α(L)=0.00801 *12*; α(M)=0.001491 *21* α(N)=0.000247 *4*; α(O)=1.243×10^{-5} *18* %Iγ=0.45 *4*, using the calculated normalization.
183.85 *3*	8.0 *4*	409.74	$7/2^+$	225.873	$3/2^+$	E2		0.1530	α(K)=0.1282 *18*; α(L)=0.0204 *3*; α(M)=0.00383 *6*

$^{109}_{45}Rh_{64}$-4

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡@]	α[#]	Comments
									α(N)=0.000608 *9*; α(O)=2.05×10^{-5} *3* %Iγ=1.65 *12*, using the calculated normalization. Mult.: α(K)exp=0.13 *3* (1992PeZX).
185.95 *3*	0.47 *10*	926.76	5/2$^-$	740.80	3/2$^-$	[M1]		0.0626	α(K)=0.0546 *8*; α(L)=0.00656 *10*; α(M)=0.001221 *18* α(N)=0.000203 *3*; α(O)=1.019×10^{-5} *15* %Iγ=0.097 *22*, using the calculated normalization.
194.10 *5*	9.0 *13*	568.10	3/2$^-$	373.99	1/2$^-$	[M1]		0.0559	α(K)=0.0488 *7*; α(L)=0.00585 *9*; α(M)=0.001088 *16* α(N)=0.000180 *3*; α(O)=9.09×10^{-6} *13* %Iγ=1.9 *3*, using the calculated normalization.
200.74 *3*	2.0 *2*	1511.512	7/2$^+$	1310.72	(3/2$^+$)	[E2]		0.1122	α(K)=0.0945 *14*; α(L)=0.01452 *21*; α(M)=0.00273 *4* α(N)=0.000434 *6*; α(O)=1.525×10^{-5} *22* %Iγ=0.41 *5*, using the calculated normalization.
200.9 *3*	0.6 *2*	426.759	5/2$^+$	225.873	3/2$^+$	[M1]		0.0510	α(K)=0.0445 *7*; α(L)=0.00533 *8*; α(M)=0.000992 *15* α(N)=0.0001646 *24*; α(O)=8.29×10^{-6} *12* %Iγ=0.12 *5*, using the calculated normalization.
203.6 *1*	0.5 *1*	409.74	7/2$^+$	206.250	9/2$^+$	[M1]		0.0492	α(K)=0.0430 *6*; α(L)=0.00515 *8*; α(M)=0.000957 *14* α(N)=0.0001588 *23*; α(O)=8.01×10^{-6} *12* %Iγ=0.103 *22*, using the calculated normalization.
206.29 *3*	100 *5*	206.250	9/2$^+$	0.0	7/2$^+$	M1		0.0476	α(K)=0.0415 *6*; α(L)=0.00497 *7*; α(M)=0.000924 *13* α(N)=0.0001533 *22*; α(O)=7.73×10^{-6} *11* %Iγ=20.7 *13*, using the calculated normalization. Mult.: α(K)exp=0.041 *7* (1992PeZX).
218.36 *5*	1.55 *12*	890.23	(9/2$^+$)	671.876	(5/2)$^+$	[E2]		0.0836	α(K)=0.0707 *10*; α(L)=0.01055 *15*; α(M)=0.00198 *3* α(N)=0.000316 *5*; α(O)=1.153×10^{-5} *17* %Iγ=0.32 *3*, using the calculated normalization.
220.6 *3*	2.7 *7*	426.759	5/2$^+$	206.250	9/2$^+$	[E2]		0.0806	α(K)=0.0683 *10*; α(L)=0.01015 *16*; α(M)=0.00190 *3* α(N)=0.000305 *5*; α(O)=1.114×10^{-5} *17* %Iγ=0.56 *15*, using the calculated normalization.
220.64 *5*	11.0 *14*	478.28	(5/2)$^+$	257.66	(3/2)$^+$	M1+E2	1.4 *7*	0.067 *14*	α(K)=0.057 *12*; α(L)=0.0081 *20*; α(M)=0.0015 *4* α(N)=0.00024 *6*; α(O)=9.6×10^{-6} *16* %Iγ=2.3 *3*, using the calculated normalization. Mult.: α(K)exp=0.057 *11* (1992PeZX).
225.98 *3*	89 *5*	225.873	3/2$^+$	0.0	7/2$^+$	E2		0.0741	α(K)=0.0628 *9*; α(L)=0.00928 *13*; α(M)=0.001739 *25* α(N)=0.000278 *4*; α(O)=1.029×10^{-5} *15* %Iγ=18.4 *12*, using the calculated normalization. Mult.: α(K)exp=0.062 *11* (1992PeZX), 0.07 *1* (1987Ka29), 0.09 *4* (1977Ba57).
232.87 *3*	2.53 *18*	855.99	5/2$^-$	623.12	5/2$^-$	[M1]		0.0346	α(K)=0.0302 *5*; α(L)=0.00360 *5*; α(M)=0.000670 *10* α(N)=0.0001111 *16*; α(O)=5.62×10^{-6} *8* %Iγ=0.52 *5*, using the calculated normalization.
239.90 *3*	4.9 *3*	980.71	(1/2)	740.80	3/2$^-$				%Iγ=1.01 *8*, using the calculated normalization.
245.09 *3*	11.7 *8*	671.876	(5/2)$^+$	426.759	5/2$^+$	(E2)		0.0560	α(K)=0.0476 *7*; α(L)=0.00686 *10*; α(M)=0.001285 *18*

$\gamma(^{109}Rh)$ (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Comments
								α(N)=0.000206 *3*; α(O)=7.87×10^{-6} *11* %Iγ=2.42 *20*, using the calculated normalization. Mult.: α(K)exp=0.07 *2* (1992PeZX), but E1+M2 with δ =1.0 *+4−3* is also possible.
249.2 *1*	6.6 *10*	623.12	5/2$^-$	373.99	1/2$^-$	[E2]	0.0529	α(K)=0.0450 *7*; α(L)=0.00646 *9*; α(M)=0.001209 *17* α(N)=0.000194 *3*; α(O)=7.45×10^{-6} *11* %Iγ=1.36 *22*, using the calculated normalization.
252.45 *5*	6.3 *4*	478.28	(5/2)$^+$	225.873	3/2$^+$	[M1]	0.0280	α(K)=0.0245 *4*; α(L)=0.00291 *4*; α(M)=0.000542 *8* α(N)=8.99×10^{-5} *13*; α(O)=4.55×10^{-6} *7* %Iγ=1.30 *11*, using the calculated normalization.
265.61 *3*	2.25 *14*	1576.33	5/2$^+$,7/2$^+$	1310.72	(3/2$^+$)	[M1]	0.0246	α(K)=0.0215 *3*; α(L)=0.00255 *4*; α(M)=0.000474 *7* α(N)=7.87×10^{-5} *11*; α(O)=3.99×10^{-6} *6* %Iγ=0.47 *4*, using the calculated normalization.
272.1 *1*	0.5 *2*	478.28	(5/2)$^+$	206.250	9/2$^+$	[E2]	0.0392	α(K)=0.0335 *5*; α(L)=0.00469 *7*; α(M)=0.000877 *13* α(N)=0.0001413 *20*; α(O)=5.59×10^{-6} *8* %Iγ=0.10 *5*, using the calculated normalization.
287.89 *5*	1.46 *13*	855.99	5/2$^-$	568.10	3/2$^-$	[M1]	0.0200	α(K)=0.01748 *25*; α(L)=0.00207 *3*; α(M)=0.000385 *6* α(N)=6.39×10^{-5} *9*; α(O)=3.24×10^{-6} *5* %Iγ=0.30 *3*, using the calculated normalization.
303.64 *5*	1.3 *3*	926.76	5/2$^-$	623.12	5/2$^-$	[M1]	0.01747	α(K)=0.01527 *22*; α(L)=0.00181 *3*; α(M)=0.000336 *5* α(N)=5.57×10^{-5} *8*; α(O)=2.83×10^{-6} *4* %Iγ=0.27 *7*, using the calculated normalization.
310.39 *5*	1.24 *12*	1051.20	(1/2,3/2,5/2$^-$)	740.80	3/2$^-$	[M1]	0.01652	α(K)=0.01444 *21*; α(L)=0.001707 *24*; α(M)=0.000317 *5* α(N)=5.27×10^{-5} *8*; α(O)=2.68×10^{-6} *4* %Iγ=0.26 *3*, using the calculated normalization.
324.4 *1*	2.20 *24*	530.66	11/2$^+$	206.250	9/2$^+$			%Iγ=0.45 *6*, using the calculated normalization.
350.2 *2*	0.5 *2*	973.29	(7/2$^-$)	623.12	5/2$^-$	[M1]	0.01219	α(K)=0.01066 *15*; α(L)=0.001256 *18*; α(M)=0.000233 *4* α(N)=3.87×10^{-5} *6*; α(O)=1.97×10^{-6} *3* %Iγ=0.10 *5*, using the calculated normalization.
352.9 *1*	1.07 *16*	1929.07	7/2$^+$	1576.33	5/2$^+$,7/2$^+$	[M1]	0.01196	α(K)=0.01046 *15*; α(L)=0.001231 *18*; α(M)=0.000229 *4* α(N)=3.80×10^{-5} *6*; α(O)=1.94×10^{-6} *3* %Iγ=0.22 *4*, using the calculated normalization.
354.5 *3*	0.6 *2*	1026.46	(5/2,7/2)$^+$	671.876	(5/2)$^+$	[M1]	0.01183	α(K)=0.01034 *15*; α(L)=0.001217 *18*; α(M)=0.000226 *4* α(N)=3.76×10^{-5} *6*; α(O)=1.91×10^{-6} *3* %Iγ=0.12 *5*, using the calculated normalization.
358.429 *21*	62 *3*	358.584	3/2$^+$	0.0	7/2$^+$	E2	0.01568	α(K)=0.01351 *19*; α(L)=0.001783 *25*; α(M)=0.000333 *5* α(N)=5.40×10^{-5} *8*; α(O)=2.31×10^{-6} *4* E_γ: From 1979Bo26. %Iγ=12.8 *9*, using the calculated normalization. Mult.: α(K)exp=0.013 *3* (1992PeZX).
358.7 *5*	1.0 *3*	926.76	5/2$^-$	568.10	3/2$^-$	[M1]	0.01148	α(K)=0.01004 *15*; α(L)=0.001182 *17*; α(M)=0.000219 *4* α(N)=3.65×10^{-5} *6*; α(O)=1.86×10^{-6} *3* %Iγ=0.21 *7*, using the calculated normalization.
366.81 *3*	8.2 *6*	740.80	3/2$^-$	373.99	1/2$^-$	[M1]	0.01086	α(K)=0.00950 *14*; α(L)=0.001117 *16*; α(M)=0.000207 *3*

$^{109}_{45}Rh_{64}$-6

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(N)=3.45×10^{-5} *5*; α(O)=1.758×10^{-6} *25* %Iγ=1.69 *15*, using the calculated normalization.
381.4 *1*	1.2 *3*	1053.26	5/2$^+$,7/2$^+$	671.876	(5/2)$^+$	[M1]	0.00986	α(K)=0.00863 *12*; α(L)=0.001013 *15*; α(M)=0.000188 *3* α(N)=3.12×10^{-5} *5*; α(O)=1.595×10^{-6} *23* %Iγ=0.25 *7*, using the calculated normalization.
382.8 *1*	2.2 *3*	861.00	(9/2$^+$)	478.28	(5/2)$^+$	[E2]	0.01276	α(K)=0.01101 *16*; α(L)=0.001436 *21*; α(M)=0.000268 *4* α(N)=4.36×10^{-5} *7*; α(O)=1.90×10^{-6} *3* %Iγ=0.45 *7*, using the calculated normalization.
405.0 *5*	0.4 *2*	973.29	(7/2$^-$)	568.10	3/2$^-$	[E2]	0.01069	α(K)=0.00923 *14*; α(L)=0.001193 *18*; α(M)=0.000222 *4* α(N)=3.62×10^{-5} *6*; α(O)=1.597×10^{-6} *24* %Iγ=0.08 *5*, using the calculated normalization.
409.7 *1*	1.1 *1*	409.74	7/2$^+$	0.0	7/2$^+$	[M1]	0.00826	α(K)=0.00723 *11*; α(L)=0.000848 *12*; α(M)=0.0001573 *22* α(N)=2.61×10^{-5} *4*; α(O)=1.336×10^{-6} *19* %Iγ=0.227 *24*, using the calculated normalization.
415.34 *5*	1.2 *5*	1511.512	7/2$^+$	1096.25	(9/2)$^+$	[M1]	0.00799	α(K)=0.00699 *10*; α(L)=0.000819 *12*; α(M)=0.0001521 *22* α(N)=2.53×10^{-5} *4*; α(O)=1.292×10^{-6} *18* %Iγ=0.25 *11*, using the calculated normalization.
426.84 *5*	47.7 *24*	426.759	5/2$^+$	0.0	7/2$^+$	[M1]	0.00748	α(K)=0.00654 *10*; α(L)=0.000766 *11*; α(M)=0.0001421 *20* α(N)=2.36×10^{-5} *4*; α(O)=1.208×10^{-6} *17* %Iγ=9.9 *7*, using the calculated normalization.
435.72 *5*	2.1 *1*	641.98	(11/2$^+$)	206.250	9/2$^+$	[M1]	0.00711	α(K)=0.00622 *9*; α(L)=0.000728 *11*; α(M)=0.0001351 *19* α(N)=2.24×10^{-5} *4*; α(O)=1.149×10^{-6} *16* %Iγ=0.43 *3*, using the calculated normalization.
451.2 *2*	0.5 *1*	861.00	(9/2$^+$)	409.74	7/2$^+$	[M1]	0.00653	α(K)=0.00572 *8*; α(L)=0.000668 *10*; α(M)=0.0001240 *18* α(N)=2.06×10^{-5} *3*; α(O)=1.055×10^{-6} *15* %Iγ=0.103 *22*, using the calculated normalization.
454.6 *3*	0.2 *1*	1096.25	(9/2)$^+$	641.98	(11/2$^+$)	[M1]	0.00641	α(K)=0.00561 *8*; α(L)=0.000656 *10*; α(M)=0.0001217 *18* α(N)=2.02×10^{-5} *3*; α(O)=1.036×10^{-6} *15* %Iγ=0.041 *21*, using the calculated normalization.
455.9 *2*	0.74 *10*	2093.91	(3/2$^+$)	1637.97	(3/2)$^-$	[E1]	0.00223	α(K)=0.00196 *3*; α(L)=0.000225 *4*; α(M)=4.17×10^{-5} *6* α(N)=6.89×10^{-6} *10*; α(O)=3.44×10^{-7} *5* %Iγ=0.153 *22*, using the calculated normalization.
458.3 *2*	0.3 *1*	1511.512	7/2$^+$	1053.26	5/2$^+$,7/2$^+$	[M1]	0.00629	α(K)=0.00550 *8*; α(L)=0.000643 *9*; α(M)=0.0001193 *17* α(N)=1.98×10^{-5} *3*; α(O)=1.015×10^{-6} *15* %Iγ=0.062 *21*, using the calculated normalization.
463.4 *1*	1.0 *4*	890.23	(9/2$^+$)	426.759	5/2$^+$	[E2]	0.00708	α(K)=0.00614 *9*; α(L)=0.000776 *11*; α(M)=0.0001445 *21* α(N)=2.36×10^{-5} *4*; α(O)=1.071×10^{-6} *15* %Iγ=0.21 *9*, using the calculated normalization.
465.65 *3*	11.4 *6*	671.876	(5/2)$^+$	206.250	9/2$^+$	[E2]	0.00698	α(K)=0.00605 *9*; α(L)=0.000764 *11*; α(M)=0.0001423 *20* α(N)=2.33×10^{-5} *4*; α(O)=1.056×10^{-6} *15* %Iγ=2.36 *17*, using the calculated normalization.
478.4 *1*	0.73 *8*	478.28	(5/2)$^+$	0.0	7/2$^+$	[M1]	0.00567	α(K)=0.00496 *7*; α(L)=0.000579 *9*; α(M)=0.0001074 *15*

$^{109}_{45}Rh_{64}$-7

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Comments
								α(N)=1.78×10^{-5} *3*; α(O)=9.15×10^{-7} *13* %Iγ=0.151 *18*, using the calculated normalization.
480.1 *2*	0.75 *8*	1576.33	5/2$^+$,7/2$^+$	1096.25	(9/2)$^+$	[M1,E2]	0.0060 *4*	α(K)=0.0052 *4*; α(L)=0.00063 *7*; α(M)=0.000118 *12* α(N)=1.94×10^{-5} *18*; α(O)=9.4×10^{-7} *4* %Iγ=0.155 *19*, using the calculated normalization.
482.0 *1*	0.5 *5*	855.99	5/2$^-$	373.99	1/2$^-$	[E2]	0.00630	α(K)=0.00546 *8*; α(L)=0.000687 *10*; α(M)=0.0001278 *18* α(N)=2.09×10^{-5} *3*; α(O)=9.55×10^{-7} *14* %Iγ=0.10 *11*, using the calculated normalization.
485.04 *5*	1.09 *10*	1511.512	7/2$^+$	1026.46	(5/2,7/2)$^+$	[M1]	0.00548	α(K)=0.00480 *7*; α(L)=0.000560 *8*; α(M)=0.0001039 *15* α(N)=1.726×10^{-5} *25*; α(O)=8.85×10^{-7} *13* %Iγ=0.225 *24*, using the calculated normalization.
499.94 *5*	3.13 *25*	1511.512	7/2$^+$	1011.60	(3/2)$^+$	[E2]	0.00566	α(K)=0.00491 *7*; α(L)=0.000614 *9*; α(M)=0.0001143 *16* α(N)=1.87×10^{-5} *3*; α(O)=8.60×10^{-7} *12* %Iγ=0.65 *6*, using the calculated normalization.
530.7 *1*	0.58 *7*	530.66	11/2$^+$	0.0	7/2$^+$			%Iγ=0.120 *16*, using the calculated normalization.
564.5 *5*	1.0 *3*	1576.33	5/2$^+$,7/2$^+$	1011.60	(3/2)$^+$	[M1,E2]	0.00391 *11*	α(K)=0.00341 *8*; α(L)=0.000408 *21*; α(M)=7.6×10^{-5} *4* α(N)=1.25×10^{-5} *6*; α(O)=6.14×10^{-7} *9* %Iγ=0.21 *7*, using the calculated normalization.
565.7 *3*	0.9 *3*	1096.25	(9/2)$^+$	530.66	11/2$^+$	[M1]	0.00380	α(K)=0.00333 *5*; α(L)=0.000386 *6*; α(M)=7.16×10^{-5} *10* α(N)=1.191×10^{-5} *17*; α(O)=6.12×10^{-7} *9* %Iγ=0.19 *7*, using the calculated normalization.
575.0 *1*	0.59 *9*	1053.26	5/2$^+$,7/2$^+$	478.28	(5/2)$^+$	[M1]	0.00366	α(K)=0.00320 *5*; α(L)=0.000372 *6*; α(M)=6.89×10^{-5} *10* α(N)=1.146×10^{-5} *16*; α(O)=5.89×10^{-7} *9* %Iγ=0.122 *20*, using the calculated normalization.
584.8 *1*	0.67 *9*	1011.60	(3/2)$^+$	426.759	5/2$^+$	[M1]	0.00351	α(K)=0.00308 *5*; α(L)=0.000357 *5*; α(M)=6.62×10^{-5} *10* α(N)=1.101×10^{-5} *16*; α(O)=5.66×10^{-7} *8* %Iγ=0.138 *20*, using the calculated normalization.
599.66 *5*	1.65 *13*	1026.46	(5/2,7/2)$^+$	426.759	5/2$^+$	[M1]	0.00331	α(K)=0.00290 *4*; α(L)=0.000336 *5*; α(M)=6.24×10^{-5} *9* α(N)=1.037×10^{-5} *15*; α(O)=5.34×10^{-7} *8* %Iγ=0.34 *4*, using the calculated normalization.
606.7 *1*	0.5 *2*	980.71	(1/2)	373.99	1/2$^-$			%Iγ=0.10 *5*, using the calculated normalization.
612.2 *2*	0.52 *10*	1283.86	(7/2$^-$)	671.876	(5/2)$^+$	[E1]	1.12×10^{-3}	α(K)=0.000981 *14*; α(L)=0.0001120 *16*; α(M)=2.07×10^{-5} *3* α(N)=3.43×10^{-6} *5*; α(O)=1.734×10^{-7} *25* %Iγ=0.107 *22*, using the calculated normalization.
616.7 *1*	0.90 *10*	1026.46	(5/2,7/2)$^+$	409.74	7/2$^+$	[M1]	0.00310	α(K)=0.00272 *4*; α(L)=0.000315 *5*; α(M)=5.84×10^{-5} *9* α(N)=9.70×10^{-6} *14*; α(O)=5.00×10^{-7} *7* %Iγ=0.186 *23*, using the calculated normalization.
618.5 *5*	0.45 *23*	1929.07	7/2$^+$	1310.72	(3/2$^+$)	[E2]	0.00311	α(K)=0.00270 *4*; α(L)=0.000330 *5*; α(M)=6.12×10^{-5} *9* α(N)=1.007×10^{-5} *15*; α(O)=4.79×10^{-7} *7* %Iγ=0.09 *5*, using the calculated normalization.
621.3 *3*	3.60 *11*	1511.512	7/2$^+$	890.23	(9/2$^+$)	[M1]	0.00305	α(K)=0.00267 *4*; α(L)=0.000309 *5*; α(M)=5.73×10^{-5} *8* α(N)=9.53×10^{-6} *14*; α(O)=4.91×10^{-7} *7* %Iγ=0.74 *5*, using the calculated normalization.

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[#]	Comments
621.9 *3*	2.2 *7*	980.71	(1/2)	358.584	$3/2^+$			%Iγ=0.45 *15*, using the calculated normalization.
626.4 *1*	1.69 *14*	1053.26	$5/2^+$,$7/2^+$	426.759	$5/2^+$	[M1]	0.00299	α(K)=0.00262 *4*; α(L)=0.000303 *5*; α(M)=5.62×10^{-5} *8* α(N)=9.35×10^{-6} *13*; α(O)=4.82×10^{-7} *7* %Iγ=0.35 *4*, using the calculated normalization.
638.9 *2*	0.25 *7*	1310.72	$(3/2^+)$	671.876	$(5/2)^+$	[E2]	0.00285	α(K)=0.00248 *4*; α(L)=0.000301 *5*; α(M)=5.59×10^{-5} *8* α(N)=9.21×10^{-6} *13*; α(O)=4.40×10^{-7} *7* %Iγ=0.052 *15*, using the calculated normalization.
643.50 *5*	2.9 *2*	1053.26	$5/2^+$,$7/2^+$	409.74	$7/2^+$	[M1]	0.00281	α(K)=0.00246 *4*; α(L)=0.000285 *4*; α(M)=5.28×10^{-5} *8* α(N)=8.78×10^{-6} *13*; α(O)=4.52×10^{-7} *7* %Iγ=0.60 *5*, using the calculated normalization.
645.3 *1*	0.92 *12*	1929.07	$7/2^+$	1283.86	$(7/2^-)$	[E1]	9.94×10^{-4}	α(K)=0.000872 *13*; α(L)=9.95×10^{-5} *14*; α(M)=1.84×10^{-5} *3* α(N)=3.05×10^{-6} *5*; α(O)=1.544×10^{-7} *22* %Iγ=0.19 *3*, using the calculated normalization.
646.0 *5*	0.4 *2*	1214.19	$(3/2)^-$	568.10	$3/2^-$	[M1]	0.00278	α(K)=0.00244 *4*; α(L)=0.000282 *4*; α(M)=5.23×10^{-5} *8* α(N)=8.70×10^{-6} *13*; α(O)=4.48×10^{-7} *7* %Iγ=0.08 *5*, using the calculated normalization.
652.5 *1*	0.2 *1*	1963.40	$(5/2)^+$	1310.72	$(3/2^+)$	[M1]	0.00272	α(K)=0.00238 *4*; α(L)=0.000276 *4*; α(M)=5.11×10^{-5} *8* α(N)=8.50×10^{-6} *12*; α(O)=4.38×10^{-7} *7* %Iγ=0.041 *21*, using the calculated normalization.
667.5 *3*	1.14 *11*	1026.46	$(5/2,7/2)^+$	358.584	$3/2^+$	[M1,E2]	0.00256 *5*	α(K)=0.00223 *5*; α(L)=0.000264 *5*; α(M)=4.90×10^{-5} *9* α(N)=8.11×10^{-6} *13*; α(O)=4.04×10^{-7} *13* %Iγ=0.24 *3*, using the calculated normalization.
671.93 *5*	4.2 *3*	671.876	$(5/2)^+$	0.0	$7/2^+$	[M1]	0.00254	α(K)=0.00223 *4*; α(L)=0.000257 *4*; α(M)=4.77×10^{-5} *7* α(N)=7.93×10^{-6} *12*; α(O)=4.09×10^{-7} *6* %Iγ=0.87 *8*, using the calculated normalization.
677.2 *1*	3.8 *3*	1051.20	$(1/2,3/2,5/2^-)$	373.99	$1/2^-$			%Iγ=0.79 *8*, using the calculated normalization.
681.4 *1*	2.29 *18*	2093.91	$(3/2^+)$	1412.53	$(1/2^+)$	[M1]	0.00246	α(K)=0.00216 *3*; α(L)=0.000249 *4*; α(M)=4.62×10^{-5} *7* α(N)=7.68×10^{-6} *11*; α(O)=3.96×10^{-7} *6* %Iγ=0.47 *5*, using the calculated normalization.
684.0 *1*	0.90 *11*	890.23	$(9/2^+)$	206.250	$9/2^+$	[M1]	0.00244	α(K)=0.00214 *3*; α(L)=0.000247 *4*; α(M)=4.58×10^{-5} *7* α(N)=7.61×10^{-6} *11*; α(O)=3.93×10^{-7} *6* %Iγ=0.186 *25*, using the calculated normalization.
686.1 *1*	2.08 *17*	1576.33	$5/2^+$,$7/2^+$	890.23	$(9/2^+)$	[M1]	0.00242	α(K)=0.00212 *3*; α(L)=0.000245 *4*; α(M)=4.54×10^{-5} *7* α(N)=7.56×10^{-6} *11*; α(O)=3.90×10^{-7} *6* %Iγ=0.43 *4*, using the calculated normalization.
692.5 *5*	0.26 *13*	1051.20	$(1/2,3/2,5/2^-)$	358.584	$3/2^+$			%Iγ=0.05 *3*, using the calculated normalization.
699.0 *5*	0.18 *9*	1229.48	$(7/2^+)$	530.66	$11/2^+$	[E2]	0.00225	α(K)=0.00196 *3*; α(L)=0.000236 *4*; α(M)=4.38×10^{-5} *7* α(N)=7.21×10^{-6} *11*; α(O)=3.48×10^{-7} *5* %Iγ=0.037 *19*, using the calculated normalization.
723.0 *2*	0.48 *9*	980.71	(1/2)	257.66	$(3/2)^+$			%Iγ=0.099 *20*, using the calculated normalization.
750.2 *5*	0.6 *2*	1176.97	$3/2^+$,$5/2$,$7/2^+$	426.759	$5/2^+$			%Iγ=0.12 *5*, using the calculated normalization.
751.0 *5*	0.31 *16*	1229.48	$(7/2^+)$	478.28	$(5/2)^+$	[M1]	0.00197	α(K)=0.001726 *25*; α(L)=0.000199 *3*; α(M)=3.68×10^{-5} *6*

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(N)=6.13×10^{-6} *9*; α(O)=3.17×10^{-7} *5* %Iγ=0.06 *4*, using the calculated normalization.
754.85 *5*	1.06 *11*	980.71	(1/2)	225.873	3/2$^+$			%Iγ=0.22 *3*, using the calculated normalization.
800.5 *2*	0.60 *10*	1026.46	(5/2,7/2)$^+$	225.873	3/2$^+$	[M1,E2]	0.00165 *6*	α(K)=0.00144 *6*; α(L)=0.000169 *4*; α(M)=3.13×10^{-5} *7* α(N)=5.18×10^{-6} *14*; α(O)=2.61×10^{-7} *13* %Iγ=0.124 *22*, using the calculated normalization.
802.7 *2*	0.3 *2*	1229.48	(7/2$^+$)	426.759	5/2$^+$	[M1]	1.69×10^{-3}	α(K)=0.001485 *21*; α(L)=0.0001707 *24*; α(M)=3.16×10^{-5} *5* α(N)=5.26×10^{-6} *8*; α(O)=2.72×10^{-7} *4* %Iγ=0.06 *5*, using the calculated normalization.
803.5 *5*	0.9 *3*	1162.19	(3/2$^-$)	358.584	3/2$^+$	[E1]	6.22×10^{-4}	α(K)=0.000547 *8*; α(L)=6.21×10^{-5} *9*; α(M)=1.147×10^{-5} *17* α(N)=1.90×10^{-6} *3*; α(O)=9.71×10^{-8} *14* %Iγ=0.19 *7*, using the calculated normalization.
818.3 *2*	1.09 *13*	1176.97	3/2$^+$,5/2,7/2$^+$	358.584	3/2$^+$			%Iγ=0.23 *3*, using the calculated normalization.
819.8 *5*	0.25 *10*	1229.48	(7/2$^+$)	409.74	7/2$^+$	[M1]	1.61×10^{-3}	α(K)=0.001416 *20*; α(L)=0.0001627 *23*; α(M)=3.01×10^{-5} *5* α(N)=5.02×10^{-6} *7*; α(O)=2.59×10^{-7} *4* %Iγ=0.052 *21*, using the calculated normalization.
820.20 *5*	19.8 *12*	1026.46	(5/2,7/2)$^+$	206.250	9/2$^+$	[M1,E2]	0.00156 *6*	α(K)=0.00136 *6*; α(L)=0.000159 *4*; α(M)=2.95×10^{-5} *8* α(N)=4.89×10^{-6} *14*; α(O)=2.47×10^{-7} *13* %Iγ=4.1 *4*, using the calculated normalization.
827.3 *3*	2.77 *22*	1053.26	5/2$^+$,7/2$^+$	225.873	3/2$^+$	[M1,E2]	0.00153 *6*	α(K)=0.00134 *6*; α(L)=0.000156 *5*; α(M)=2.89×10^{-5} *8* α(N)=4.79×10^{-6} *14*; α(O)=2.42×10^{-7} *13* %Iγ=0.57 *6*, using the calculated normalization.
832.5 *2*	0.46 *10*	1310.72	(3/2$^+$)	478.28	(5/2)$^+$	[M1]	1.56×10^{-3}	α(K)=0.001368 *20*; α(L)=0.0001571 *22*; α(M)=2.91×10^{-5} *4* α(N)=4.84×10^{-6} *7*; α(O)=2.51×10^{-7} *4* %Iγ=0.095 *22*, using the calculated normalization.
838.4 *2*	0.5 *2*	2015.41	(3/2)	1176.97	3/2$^+$,5/2,7/2$^+$			%Iγ=0.10 *5*, using the calculated normalization.
839.8 *3*	3.3 *8*	1511.512	7/2$^+$	671.876	(5/2)$^+$	[M1]	1.53×10^{-3}	α(K)=0.001341 *19*; α(L)=0.0001540 *22*; α(M)=2.85×10^{-5} *4* α(N)=4.75×10^{-6} *7*; α(O)=2.46×10^{-7} *4* %Iγ=0.68 *17*, using the calculated normalization.
840.2 *3*	0.77 *23*	1214.19	(3/2)$^-$	373.99	1/2$^-$	[M1]	1.53×10^{-3}	α(K)=0.001340 *19*; α(L)=0.0001539 *22*; α(M)=2.85×10^{-5} *4* α(N)=4.74×10^{-6} *7*; α(O)=2.45×10^{-7} *4* %Iγ=0.16 *5*, using the calculated normalization.
847.0 *1*	5.1 *10*	1053.26	5/2$^+$,7/2$^+$	206.250	9/2$^+$	[M1,E2]	0.00145 *6*	α(K)=0.00127 *6*; α(L)=0.000147 *5*; α(M)=2.73×10^{-5} *8* α(N)=4.53×10^{-6} *14*; α(O)=2.29×10^{-7} *13* %Iγ=1.05 *21*, using the calculated normalization.
860.9 *3*	0.30 *9*	861.00	(9/2$^+$)	0.0	7/2$^+$	[M1]	1.45×10^{-3}	α(K)=0.001269 *18*; α(L)=0.0001456 *21*;

$^{109}_{45}Rh_{64}$-10

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(M)=2.70×10^{-5} *4* α(N)=4.49×10^{-6} *7*; α(O)=2.32×10^{-7} *4* %Iγ=0.062 *19*, using the calculated normalization.
869.5 *2*	0.50 *10*	1511.512	7/2$^+$	641.98	(11/2$^+$)	[E2]	1.31×10^{-3}	α(K)=0.001142 *16*; α(L)=0.0001347 *19*; α(M)=2.50×10^{-5} *4* α(N)=4.13×10^{-6} *6*; α(O)=2.04×10^{-7} *3* %Iγ=0.103 *22*, using the calculated normalization.
874.0 *3*	0.36 *14*	1283.86	(7/2$^-$)	409.74	7/2$^+$	[E1]	5.25×10^{-4}	α(K)=0.000461 *7*; α(L)=5.22×10^{-5} *8*; α(M)=9.66×10^{-6} *14* α(N)=1.603×10^{-6} *23*; α(O)=8.20×10^{-8} *12* %Iγ=0.07 *3*, using the calculated normalization.
875.8 *1*	1.01 *20*	1929.07	7/2$^+$	1053.26	5/2$^+$,7/2$^+$	[M1]	1.39×10^{-3}	α(K)=0.001221 *17*; α(L)=0.0001401 *20*; α(M)=2.60×10^{-5} *4* α(N)=4.32×10^{-6} *6*; α(O)=2.24×10^{-7} *4* %Iγ=0.21 *5*, using the calculated normalization.
879.7 *2*	0.74 *10*	2093.91	(3/2$^+$)	1214.19	(3/2)$^-$	[E1]	5.18×10^{-4}	α(K)=0.000455 *7*; α(L)=5.16×10^{-5} *8*; α(M)=9.53×10^{-6} *14* α(N)=1.582×10^{-6} *23*; α(O)=8.09×10^{-8} *12* %Iγ=0.153 *22*, using the calculated normalization.
883.94 *5*	1.51 *15*	1310.72	(3/2$^+$)	426.759	5/2$^+$	[M1]	1.36×10^{-3}	α(K)=0.001196 *17*; α(L)=0.0001372 *20*; α(M)=2.54×10^{-5} *4* α(N)=4.23×10^{-6} *6*; α(O)=2.19×10^{-7} *3* %Iγ=0.31 *4*, using the calculated normalization.
890.1 *3*	1.5 *4*	1096.25	(9/2)$^+$	206.250	9/2$^+$	[M1]	1.34×10^{-3}	α(K)=0.001178 *17*; α(L)=0.0001351 *19*; α(M)=2.50×10^{-5} *4* α(N)=4.16×10^{-6} *6*; α(O)=2.16×10^{-7} *3* %Iγ=0.31 *9*, using the calculated normalization.
890.3 *3*	9.6 *10*	890.23	(9/2$^+$)	0.0	7/2$^+$	[M1]	1.34×10^{-3}	α(K)=0.001177 *17*; α(L)=0.0001350 *19*; α(M)=2.50×10^{-5} *4* α(N)=4.16×10^{-6} *6*; α(O)=2.16×10^{-7} *3* %Iγ=1.98 *23*, using the calculated normalization.
902.6 *1*	2.23 *20*	1929.07	7/2$^+$	1026.46	(5/2,7/2)$^+$	[M1]	1.30×10^{-3}	α(K)=0.001142 *16*; α(L)=0.0001309 *19*; α(M)=2.43×10^{-5} *4* α(N)=4.04×10^{-6} *6*; α(O)=2.09×10^{-7} *3* %Iγ=0.46 *5*, using the calculated normalization.
904.6 *2*	1.73 *7*	1576.33	5/2$^+$,7/2$^+$	671.876	(5/2)$^+$	[M1]	1.30×10^{-3}	α(K)=0.001136 *16*; α(L)=0.0001302 *19*; α(M)=2.41×10^{-5} *4* α(N)=4.02×10^{-6} *6*; α(O)=2.08×10^{-7} *3* %Iγ=0.358 *23*, using the calculated normalization.
917.5 *1*	3.08 *23*	1929.07	7/2$^+$	1011.60	(3/2)$^+$	[E2]	1.15×10^{-3}	α(K)=0.001006 *14*; α(L)=0.0001183 *17*; α(M)=2.19×10^{-5} *3* α(N)=3.63×10^{-6} *5*; α(O)=1.80×10^{-7} *3* %Iγ=0.64 *6*, using the calculated normalization.
931.7 *2*	0.35 *17*	2093.91	(3/2$^+$)	1162.19	(3/2$^-$)	[E1]	4.62×10^{-4}	α(K)=0.000407 *6*; α(L)=4.60×10^{-5} *7*; α(M)=8.50×10^{-6} *12* α(N)=1.411×10^{-6} *20*; α(O)=7.23×10^{-8} *11* %Iγ=0.07 *4*, using the calculated normalization.
952.00 *5*	4.2 *3*	1310.72	(3/2$^+$)	358.584	3/2$^+$	[M1]	1.16×10^{-3}	α(K)=0.001015 *15*; α(L)=0.0001162 *17*; α(M)=2.15×10^{-5} *3* α(N)=3.58×10^{-6} *5*; α(O)=1.86×10^{-7} *3* %Iγ=0.87 *8*, using the calculated normalization.
960.5 *5*	0.29 *15*	1971.87	(5/2)$^+$	1011.60	(3/2)$^+$	[M1]	1.13×10^{-3}	α(K)=0.000995 *14*; α(L)=0.0001139 *16*; α(M)=2.11×10^{-5} *3* α(N)=3.51×10^{-6} *5*; α(O)=1.82×10^{-7} *3* %Iγ=0.06 *4*, using the calculated normalization.

$^{109}_{45}Rh_{64}$-11

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
980.8 *2*	0.79 *11*	1511.512	$7/2^+$	530.66	$11/2^+$	[E2]	9.86×10^{-4}	α(K)=0.000863 *12*; α(L)=0.0001010 *15*; α(M)=1.87×10^{-5} *3* α(N)=3.10×10^{-6} *5*; α(O)=1.548×10^{-7} *22* %Iγ=0.163 *24*, using the calculated normalization.
985.8 *2*	0.58 *10*	1412.53	$(1/2^+)$	426.759	$5/2^+$	[E2]	9.75×10^{-4}	α(K)=0.000854 *12*; α(L)=9.98×10^{-5} *14*; α(M)=1.85×10^{-5} *3* α(N)=3.06×10^{-6} *5*; α(O)=1.530×10^{-7} *22* %Iγ=0.120 *22*, using the calculated normalization.
1002.5 *5*	1.0 *5*	2098.59	$(5/2^+,7/2)$	1096.25	$(9/2)^+$			%Iγ=0.21 *11*, using the calculated normalization.
1007.7 *2*	0.67 *20*	2184.72	$(3/2^+,5/2)$	1176.97	$3/2^+,5/2,7/2^+$			%Iγ=0.14 *5*, using the calculated normalization.
1011.7 *1*	12.1 *7*	1011.60	$(3/2)^+$	0.0	$7/2^+$	[E2]	9.19×10^{-4}	α(K)=0.000805 *12*; α(L)=9.39×10^{-5} *14*; α(M)=1.741×10^{-5} *25* α(N)=2.88×10^{-6} *4*; α(O)=1.444×10^{-7} *21* %Iγ=2.50 *19*, using the calculated normalization.
1023.2 *1*	1.18 *15*	1229.48	$(7/2^+)$	206.250	$9/2^+$	[M1]	9.87×10^{-4}	α(K)=0.000867 *13*; α(L)=9.90×10^{-5} *14*; α(M)=1.83×10^{-5} *3* α(N)=3.05×10^{-6} *5*; α(O)=1.584×10^{-7} *23* %Iγ=0.24 *4*, using the calculated normalization.
1026.49 *5*	7.1 *4*	1026.46	$(5/2,7/2)^+$	0.0	$7/2^+$	[M1]	9.80×10^{-4}	α(K)=0.000861 *12*; α(L)=9.83×10^{-5} *14*; α(M)=1.82×10^{-5} *3* α(N)=3.03×10^{-6} *5*; α(O)=1.573×10^{-7} *22* %Iγ=1.47 *11*, using the calculated normalization.
1033.2 *1*	0.50 *10*	1511.512	$7/2^+$	478.28	$(5/2)^+$	[M1]	9.66×10^{-4}	α(K)=0.000848 *12*; α(L)=9.69×10^{-5} *14*; α(M)=1.80×10^{-5} *3* α(N)=2.99×10^{-6} *5*; α(O)=1.551×10^{-7} *22* %Iγ=0.103 *22*, using the calculated normalization.
1038.8 *1*	1.33 *14*	1929.07	$7/2^+$	890.23	$(9/2^+)$	[M1]	9.55×10^{-4}	α(K)=0.000838 *12*; α(L)=9.58×10^{-5} *14*; α(M)=1.774×10^{-5} *25* α(N)=2.95×10^{-6} *5*; α(O)=1.533×10^{-7} *22* %Iγ=0.27 *4*, using the calculated normalization.
1042.7 *2*	2.5 *4*	2093.91	$(3/2^+)$	1051.20	$(1/2,3/2,5/2^-)$			%Iγ=0.52 *9*, using the calculated normalization.
1053.4 *1*	4.2 *3*	1053.26	$5/2^+,7/2^+$	0.0	$7/2^+$	[M1]	9.27×10^{-4}	α(K)=0.000813 *12*; α(L)=9.29×10^{-5} *13*; α(M)=1.720×10^{-5} *24* α(N)=2.86×10^{-6} *4*; α(O)=1.487×10^{-7} *21* %Iγ=0.87 *8*, using the calculated normalization.
1054.0 *5*	0.8 *3*	1412.53	$(1/2^+)$	358.584	$3/2^+$	[M1]	9.25×10^{-4}	α(K)=0.000812 *12*; α(L)=9.28×10^{-5} *13*; α(M)=1.718×10^{-5} *25* α(N)=2.86×10^{-6} *4*; α(O)=1.485×10^{-7} *21* %Iγ=0.17 *7*, using the calculated normalization.
1068.0 *5*	0.4 *2*	1929.07	$7/2^+$	861.00	$(9/2^+)$	[M1]	8.99×10^{-4}	α(K)=0.000789 *11*; α(L)=9.01×10^{-5} *13*; α(M)=1.669×10^{-5} *24* α(N)=2.78×10^{-6} *4*; α(O)=1.443×10^{-7} *21* %Iγ=0.08 *5*, using the calculated normalization.
1073.2 *1*	3.8 *3*	1963.40	$(5/2)^+$	890.23	$(9/2^+)$	[E2]	8.06×10^{-4}	α(K)=0.000706 *10*; α(L)=8.21×10^{-5} *12*; α(M)=1.521×10^{-5} *22* α(N)=2.52×10^{-6} *4*; α(O)=1.268×10^{-7} *18* %Iγ=0.79 *8*, using the calculated normalization.
1077.6 *1*	4.5 *5*	1283.86	$(7/2^-)$	206.250	$9/2^+$	[E1]	3.50×10^{-4}	α(K)=0.000308 *5*; α(L)=3.47×10^{-5} *5*; α(M)=6.42×10^{-6} *9* α(N)=1.067×10^{-6} *15*; α(O)=5.48×10^{-8} *8* %Iγ=0.93 *12*, using the calculated normalization.
1081.5 *5*	0.6 *3*	1971.87	$(5/2)^+$	890.23	$(9/2^+)$	[E2]	8.75×10^{-4}	α(K)=0.000768 *11*; α(L)=8.77×10^{-5} *13*; α(M)=1.624×10^{-5} *23* α(N)=2.70×10^{-6} *4*; α(O)=1.404×10^{-7} *20* %Iγ=0.12 *7*, using the calculated normalization.
1082.2 *1*	1.40 *21*	2093.91	$(3/2^+)$	1011.60	$(3/2)^+$	[M1]	8.74×10^{-4}	α(K)=0.000767 *11*; α(L)=8.76×10^{-5} *13*; α(M)=1.622×10^{-5} *23*

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(N)=2.70×10^{-6} *4*; α(O)=1.402×10^{-7} *20* %Iγ=0.29 *5*, using the calculated normalization.
1084.7 *1*	2.0 *3*	1511.512	7/2$^+$	426.759	5/2$^+$	[M1]	8.70×10^{-4}	α(K)=0.000763 *11*; α(L)=8.71×10^{-5} *13*; α(M)=1.614×10^{-5} *23* α(N)=2.69×10^{-6} *4*; α(O)=1.395×10^{-7} *20* %Iγ=0.41 *7*, using the calculated normalization.
1096.30 *5*	2.2 *4*	1096.25	(9/2)$^+$	0.0	7/2$^+$	[M1]	8.50×10^{-4}	α(K)=0.000746 *11*; α(L)=8.51×10^{-5} *12*; α(M)=1.576×10^{-5} *22* α(N)=2.62×10^{-6} *4*; α(O)=1.363×10^{-7} *19* %Iγ=0.45 *9*, using the calculated normalization.
1098.0 *2*	0.90 *16*	1576.33	5/2$^+$,7/2$^+$	478.28	(5/2)$^+$	[M1]	8.47×10^{-4}	α(K)=0.000744 *11*; α(L)=8.48×10^{-5} *12*; α(M)=1.571×10^{-5} *22* α(N)=2.62×10^{-6} *4*; α(O)=1.358×10^{-7} *19* %Iγ=0.19 *4*, using the calculated normalization.
1105.6 *5*	0.4 *2*	2117.00	(3/2$^+$)	1011.60	(3/2)$^+$	[M1]	8.35×10^{-4}	α(K)=0.000733 *11*; α(L)=8.36×10^{-5} *12*; α(M)=1.548×10^{-5} *22* α(N)=2.58×10^{-6} *4*; α(O)=1.338×10^{-7} *19*; α(IPF)=5.45×10^{-7} *12* %Iγ=0.08 *5*, using the calculated normalization.
1113.2 *1*	6.3 *4*	2093.91	(3/2$^+$)	980.71	(1/2)			%Iγ=1.30 *11*, using the calculated normalization.
1133.5 *2*	0.50 *11*	2184.72	(3/2$^+$,5/2)	1051.20	(1/2,3/2,5/2$^-$)			%Iγ=0.103 *24*, using the calculated normalization.
1139.2 *2*	1.06 *13*	2190.50	(3/2$^+$)	1051.20	(1/2,3/2,5/2$^-$)			%Iγ=0.22 *3*, using the calculated normalization.
1150.7 *3*	1.06 *14*	2247.07	(5/2$^+$,7/2)	1096.25	(9/2)$^+$			%Iγ=0.22 *3*, using the calculated normalization.
1152.9 *1*	1.85 *18*	1511.512	7/2$^+$	358.584	3/2$^+$	[E2]	6.92×10^{-4}	α(K)=0.000604 *9*; α(L)=6.99×10^{-5} *10*; α(M)=1.296×10^{-5} *19* α(N)=2.15×10^{-6} *3*; α(O)=1.086×10^{-7} *16*; α(IPF)=2.71×10^{-6} *4* %Iγ=0.38 *5*, using the calculated normalization.
1155.0 *5*	0.6 *3*	1412.53	(1/2$^+$)	257.66	(3/2)$^+$	[M1]	7.62×10^{-4}	α(K)=0.000667 *10*; α(L)=7.60×10^{-5} *11*; α(M)=1.407×10^{-5} *20* α(N)=2.34×10^{-6} *4*; α(O)=1.218×10^{-7} *17*; α(IPF)=2.33×10^{-6} *5* %Iγ=0.12 *7*, using the calculated normalization.
1166.5 *2*	0.38 *10*	1576.33	5/2$^+$,7/2$^+$	409.74	7/2$^+$	[M1]	7.47×10^{-4}	α(K)=0.000653 *10*; α(L)=7.44×10^{-5} *11*; α(M)=1.377×10^{-5} *20* α(N)=2.29×10^{-6} *4*; α(O)=1.192×10^{-7} *17*; α(IPF)=3.08×10^{-6} *5* %Iγ=0.079 *21*, using the calculated normalization.
1177.0 *3*	0.50 *13*	1176.97	3/2$^+$,5/2,7/2$^+$	0.0	7/2$^+$			%Iγ=0.10 *3*, using the calculated normalization.
1186.7 *3*	0.3 *1*	1412.53	(1/2$^+$)	225.873	3/2$^+$	[M1]	7.21×10^{-4}	α(K)=0.000629 *9*; α(L)=7.17×10^{-5} *10*; α(M)=1.327×10^{-5} *19* α(N)=2.21×10^{-6} *3*; α(O)=1.149×10^{-7} *16*; α(IPF)=4.75×10^{-6} *8* %Iγ=0.062 *21*, using the calculated normalization.
1208.1 *3*	0.79 *15*	2098.59	(5/2$^+$,7/2)	890.23	(9/2$^+$)			%Iγ=0.16 *4*, using the calculated normalization.
1209.6 *3*	1.57 *20*	2190.50	(3/2$^+$)	980.71	(1/2)			%Iγ=0.32 *5*, using the calculated normalization.
1229.5 *1*	0.82 *13*	1229.48	(7/2$^+$)	0.0	7/2$^+$	[M1]	6.74×10^{-4}	α(K)=0.000584 *9*; α(L)=6.64×10^{-5} *10*; α(M)=1.230×10^{-5} *18* α(N)=2.05×10^{-6} *3*; α(O)=1.065×10^{-7} *15*; α(IPF)=9.75×10^{-6} *14* %Iγ=0.17 *3*, using the calculated normalization.
1237.8 *5*	0.8 *4*	2098.59	(5/2$^+$,7/2)	861.00	(9/2$^+$)			%Iγ=0.17 *9*, using the calculated normalization.
1237.9 *1*	2.7 *5*	2093.91	(3/2$^+$)	855.99	5/2$^-$	[E1]	3.32×10^{-4}	α(K)=0.000239 *4*; α(L)=2.69×10^{-5} *4*; α(M)=4.98×10^{-6} *7* α(N)=8.27×10^{-7} *12*; α(O)=4.27×10^{-8} *6*; α(IPF)=6.00×10^{-5} *9* %Iγ=0.56 *11*, using the calculated normalization.
1257.2 *1*	4.4 *3*	1929.07	7/2$^+$	671.876	(5/2)$^+$	[M1]	6.48×10^{-4}	α(K)=0.000557 *8*; α(L)=6.33×10^{-5} *9*; α(M)=1.173×10^{-5} *17* α(N)=1.95×10^{-6} *3*; α(O)=1.016×10^{-7} *15*; α(IPF)=1.380×10^{-5} *20* %Iγ=0.91 *8*, using the calculated normalization.

$^{109}_{45}Rh_{64}$-13

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
1274.6 *4*	0.29 *12*	2015.41	(3/2)	740.80	$3/2^-$			%Iγ=0.060 *25*, using the calculated normalization.
1279.3 *3*	1.01 *15*	1637.97	$(3/2)^-$	358.584	$3/2^+$	[E1]	3.42×10^{-4}	α(K)=0.000226 *4*; α(L)=2.54×10^{-5} *4*; α(M)=4.69×10^{-6} *7* α(N)=7.80×10^{-7} *11*; α(O)=4.02×10^{-8} *6*; α(IPF)=8.53×10^{-5} *12* %Iγ=0.21 *4*, using the calculated normalization.
1283.9 *1*	2.91 *24*	1283.86	$(7/2^-)$	0.0	$7/2^+$	[E1]	3.43×10^{-4}	α(K)=0.000225 *4*; α(L)=2.52×10^{-5} *4*; α(M)=4.66×10^{-6} *7* α(N)=7.75×10^{-7} *11*; α(O)=4.00×10^{-8} *6*; α(IPF)=8.81×10^{-5} *13* %Iγ=0.60 *6*, using the calculated normalization.
1287.0 *1*	1.23 *15*	1929.07	$7/2^+$	641.98	$(11/2^+)$	[E2]	5.69×10^{-4}	α(K)=0.000479 *7*; α(L)=5.51×10^{-5} *8*; α(M)=1.021×10^{-5} *15* α(N)=1.694×10^{-6} *24*; α(O)=8.62×10^{-8} *12*; α(IPF)=2.23×10^{-5} *4* %Iγ=0.25 *4*, using the calculated normalization.
1291.5 *1*	2.4 *3*	1963.40	$(5/2)^+$	671.876	$(5/2)^+$	[M1]	6.18×10^{-4}	α(K)=0.000526 *8*; α(L)=5.98×10^{-5} *9*; α(M)=1.107×10^{-5} *16* α(N)=1.84×10^{-6} *3*; α(O)=9.59×10^{-8} *14*; α(IPF)=1.95×10^{-5} *3* %Iγ=0.50 *7*, using the calculated normalization.
1305.3 *1*	22.1 *12*	1511.512	$7/2^+$	206.250	$9/2^+$	[M1]	6.08×10^{-4}	α(K)=0.000514 *8*; α(L)=5.85×10^{-5} *9*; α(M)=1.082×10^{-5} *16* α(N)=1.80×10^{-6} *3*; α(O)=9.38×10^{-8} *14*; α(IPF)=2.20×10^{-5} *3* %Iγ=4.6 *4*, using the calculated normalization.
1334.5 *2*	0.89 *14*	2190.50	$(3/2^+)$	855.99	$5/2^-$	[E1]	3.59×10^{-4}	α(K)=0.000210 *3*; α(L)=2.36×10^{-5} *4*; α(M)=4.35×10^{-6} *6* α(N)=7.24×10^{-7} *11*; α(O)=3.74×10^{-8} *6*; α(IPF)=0.0001201 *17* %Iγ=0.18 *3*, using the calculated normalization.
1347.5 *1*	1.61 *17*	2208.45	$(5/2^+,7/2)$	861.00	$(9/2^+)$			%Iγ=0.33 *4*, using the calculated normalization.
1353.2 *2*	0.87 *13*	2093.91	$(3/2^+)$	740.80	$3/2^-$	[E1]	3.65×10^{-4}	α(K)=0.000205 *3*; α(L)=2.30×10^{-5} *4*; α(M)=4.25×10^{-6} *6* α(N)=7.06×10^{-7} *10*; α(O)=3.65×10^{-8} *6*; α(IPF)=0.0001323 *19* %Iγ=0.18 *3*, using the calculated normalization.
1357.0 *5*	1.4 *7*	2247.07	$(5/2^+,7/2)$	890.23	$(9/2^+)$			%Iγ=0.29 *15*, using the calculated normalization.
1370.1 *1*	2.34 *21*	1576.33	$5/2^+,7/2^+$	206.250	$9/2^+$	[M1,E2]	5.43×10^{-4} *23*	α(K)=0.000443 *23*; α(L)=5.06×10^{-5} *24*; α(M)=9.4×10^{-6} *5* α(N)=1.56×10^{-6} *8*; α(O)=8.0×10^{-8} *5*; α(IPF)=3.9×10^{-5} *4* %Iγ=0.48 *5*, using the calculated normalization.
1398.6 *3*	0.72 *13*	1929.07	$7/2^+$	530.66	$11/2^+$	[E2]	5.11×10^{-4}	α(K)=0.000405 *6*; α(L)=4.63×10^{-5} *7*; α(M)=8.58×10^{-6} *12* α(N)=1.424×10^{-6} *20*; α(O)=7.28×10^{-8} *11*; α(IPF)=4.96×10^{-5} *7* %Iγ=0.15 *3*, using the calculated normalization.
1449.8 *2*	1.2 *5*	2190.50	$(3/2^+)$	740.80	$3/2^-$	[E1]	4.06×10^{-4}	α(K)=0.000182 *3*; α(L)=2.04×10^{-5} *3*; α(M)=3.77×10^{-6} *6* α(N)=6.27×10^{-7} *9*; α(O)=3.25×10^{-8} *5*; α(IPF)=0.000199 *3* %Iγ=0.25 *11*, using the calculated normalization.
1450.5 *2*	0.8 *3*	1929.07	$7/2^+$	478.28	$(5/2)^+$	[M1]	5.26×10^{-4}	α(K)=0.000413 *6*; α(L)=4.68×10^{-5} *7*; α(M)=8.67×10^{-6} *13* α(N)=1.443×10^{-6} *21*; α(O)=7.52×10^{-8} *11*; α(IPF)=5.65×10^{-5} *8* %Iγ=0.17 *7*, using the calculated normalization.
1471.0 *5*	2.0 *8*	2093.91	$(3/2^+)$	623.12	$5/2^-$	[E1]	4.17×10^{-4}	α(K)=0.0001778 *25*; α(L)=1.99×10^{-5} *3*; α(M)=3.68×10^{-6} *6* α(N)=6.12×10^{-7} *9*; α(O)=3.17×10^{-8} *5*; α(IPF)=0.000215 *3* %Iγ=0.41 *17*, using the calculated normalization.
1485.0 *5*	0.6 *3*	1963.40	$(5/2)^+$	478.28	$(5/2)^+$	[M1]	5.14×10^{-4}	α(K)=0.000393 *6*; α(L)=4.46×10^{-5} *7*; α(M)=8.25×10^{-6} *12* α(N)=1.374×10^{-6} *20*; α(O)=7.16×10^{-8} *10*; α(IPF)=6.69×10^{-5} *10* %Iγ=0.12 *7*, using the calculated normalization.
1502.28 *5*	18.3 *11*	1929.07	$7/2^+$	426.759	$5/2^+$	[M1]	5.09×10^{-4}	α(K)=0.000384 *6*; α(L)=4.35×10^{-5} *6*; α(M)=8.06×10^{-6} *12*

$^{109}_{45}Rh_{64}$-14

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(N)=1.341×10^{-6} *19*; α(O)=6.99×10^{-8} *10*; α(IPF)=7.24×10^{-5} *11* %Iγ=3.8 *3*, using the calculated normalization.
1511.7 *1*	3.1 *5*	1511.512	7/2$^+$	0.0	7/2$^+$	[M1]	5.07×10^{-4}	α(K)=0.000379 *6*; α(L)=4.30×10^{-5} *6*; α(M)=7.95×10^{-6} *12* α(N)=1.324×10^{-6} *19*; α(O)=6.90×10^{-8} *10*; α(IPF)=7.55×10^{-5} *11* %Iγ=0.64 *11*, using the calculated normalization.
1512.9 *1*	4.6 *6*	2184.72	(3/2$^+$,5/2)	671.876	(5/2)$^+$			%Iγ=0.95 *14*, using the calculated normalization.
1521.7 *3*	0.31 *10*	2193.74	(3/2$^+$,5/2)	671.876	(5/2)$^+$			%Iγ=0.064 *21*, using the calculated normalization.
1536.7 *1*	17 *3*	1963.40	(5/2)$^+$	426.759	5/2$^+$	[M1]	5.01×10^{-4}	α(K)=0.000367 *6*; α(L)=4.15×10^{-5} *6*; α(M)=7.69×10^{-6} *11* α(N)=1.280×10^{-6} *18*; α(O)=6.67×10^{-8} *10*; α(IPF)=8.41×10^{-5} *12* %Iγ=3.5 *7*, using the calculated normalization.
1537.0 *5*	0.9 *4*	2015.41	(3/2)	478.28	(5/2)$^+$			%Iγ=0.19 *9*, using the calculated normalization.
1537.5 *5*	0.8 *3*	2209.40	(3/2$^+$,5/2)	671.876	(5/2)$^+$			%Iγ=0.17 *7*, using the calculated normalization.
1545.0 *2*	1.10 *16*	1971.87	(5/2)$^+$	426.759	5/2$^+$	[M1]	5.00×10^{-4}	α(K)=0.000363 *5*; α(L)=4.11×10^{-5} *6*; α(M)=7.60×10^{-6} *11* α(N)=1.266×10^{-6} *18*; α(O)=6.60×10^{-8} *10*; α(IPF)=8.70×10^{-5} *13* %Iγ=0.23 *4*, using the calculated normalization.
1567.2 *2*	1.96 *18*	2045.54	(3/2)$^-$	478.28	(5/2)$^+$	[E1]	4.71×10^{-4}	α(K)=0.0001600 *23*; α(L)=1.79×10^{-5} *3*; α(M)=3.31×10^{-6} *5* α(N)=5.50×10^{-7} *8*; α(O)=2.85×10^{-8} *4*; α(IPF)=0.000289 *4* %Iγ=0.41 *5*, using the calculated normalization.
1570.4 *2*	0.82 *15*	1929.07	7/2$^+$	358.584	3/2$^+$	[E2]	4.76×10^{-4}	α(K)=0.000322 *5*; α(L)=3.67×10^{-5} *6*; α(M)=6.78×10^{-6} *10* α(N)=1.127×10^{-6} *16*; α(O)=5.79×10^{-8} *9*; α(IPF)=0.0001096 *16* %Iγ=0.17 *4*, using the calculated normalization.
1575.2 *5*	1.2 *5*	2247.07	(5/2$^+$,7/2)	671.876	(5/2)$^+$			%Iγ=0.25 *11*, using the calculated normalization.
1576.5 *5*	0.6 *3*	1576.33	5/2$^+$,7/2$^+$	0.0	7/2$^+$	[M1]	4.94×10^{-4}	α(K)=0.000348 *5*; α(L)=3.94×10^{-5} *6*; α(M)=7.29×10^{-6} *11* α(N)=1.214×10^{-6} *17*; α(O)=6.33×10^{-8} *9*; α(IPF)=9.84×10^{-5} *14* %Iγ=0.12 *7*, using the calculated normalization.
1585.1 *2*	1.84 *22*	2208.45	(5/2$^+$,7/2)	623.12	5/2$^-$			%Iγ=0.38 *5*, using the calculated normalization.
1588.7 *2*	0.76 *18*	2015.41	(3/2)	426.759	5/2$^+$			%Iγ=0.16 *4*, using the calculated normalization.
1615.7 *1*	4.5 *4*	2093.91	(3/2$^+$)	478.28	(5/2)$^+$	[M1]	4.90×10^{-4}	α(K)=0.000331 *5*; α(L)=3.75×10^{-5} *6*; α(M)=6.93×10^{-6} *10* α(N)=1.155×10^{-6} *17*; α(O)=6.02×10^{-8} *9*; α(IPF)=0.0001132 *16* %Iγ=0.93 *10*, using the calculated normalization.
1616.5 *5*	1.0 *3*	2184.72	(3/2$^+$,5/2)	568.10	3/2$^-$			%Iγ=0.21 *7*, using the calculated normalization.
1620.2 *3*	0.28 *8*	2098.59	(5/2$^+$,7/2)	478.28	(5/2)$^+$			%Iγ=0.058 *17*, using the calculated normalization.
1641.5 *3*	0.28 *14*	2015.41	(3/2)	373.99	1/2$^-$			%Iγ=0.06 *3*, using the calculated normalization.
1656.8 *1*	3.2 *3*	2015.41	(3/2)	358.584	3/2$^+$			%Iγ=0.66 *7*, using the calculated normalization.
1667.1 *1*	3.6 *3*	2093.91	(3/2$^+$)	426.759	5/2$^+$	[M1]	4.86×10^{-4}	α(K)=0.000311 *5*; α(L)=3.51×10^{-5} *5*; α(M)=6.50×10^{-6} *10* α(N)=1.083×10^{-6} *16*; α(O)=5.65×10^{-8} *8*; α(IPF)=0.0001330 *19* %Iγ=0.74 *8*, using the calculated normalization.
1689.0 *5*	0.2 *1*	2098.59	(5/2$^+$,7/2)	409.74	7/2$^+$			%Iγ=0.041 *21*, using the calculated normalization.
1690.0 *2*	2.0 *2*	2117.00	(3/2$^+$)	426.759	5/2$^+$	[M1]	4.86×10^{-4}	α(K)=0.000302 *5*; α(L)=3.42×10^{-5} *5*; α(M)=6.32×10^{-6} *9* α(N)=1.053×10^{-6} *15*; α(O)=5.50×10^{-8} *8*; α(IPF)=0.0001422 *20* %Iγ=0.41 *5*, using the calculated normalization.
1712.3 *3*	0.54 *15*	2190.50	(3/2$^+$)	478.28	(5/2)$^+$	[M1]	4.86×10^{-4}	α(K)=0.000294 *5*; α(L)=3.33×10^{-5} *5*; α(M)=6.16×10^{-6} *9*

$^{109}_{45}Rh_{64}$-15

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(N)=1.025×10^{-6} *15*; α(O)=5.35×10^{-8} *8*; α(IPF)=0.0001512 *22* %Iγ=0.11 *4*, using the calculated normalization.
1715.4 *2*	0.55 *11*	2193.74	(3/2$^+$,5/2)	478.28	(5/2)$^+$			%Iγ=0.114 *24*, using the calculated normalization.
1720.0 *1*	7.3 *5*	2093.91	(3/2$^+$)	373.99	1/2$^-$	[E1]	5.63×10^{-4}	α(K)=0.0001376 *20*; α(L)=1.538×10^{-5} *22*; α(M)=2.84×10^{-6} *4* α(N)=4.72×10^{-7} *7*; α(O)=2.45×10^{-8} *4*; α(IPF)=0.000407 *6* %Iγ=1.51 *13*, using the calculated normalization.
1722.8 *1*	4.8 *4*	1929.07	7/2$^+$	206.250	9/2$^+$	[M1]	4.86×10^{-4}	α(K)=0.000291 *4*; α(L)=3.29×10^{-5} *5*; α(M)=6.08×10^{-6} *9* α(N)=1.013×10^{-6} *15*; α(O)=5.29×10^{-8} *8*; α(IPF)=0.0001556 *22* %Iγ=0.99 *10*, using the calculated normalization.
1735.2 *1*	6.2 *4*	2093.91	(3/2$^+$)	358.584	3/2$^+$	[M1]	4.87×10^{-4}	α(K)=0.000287 *4*; α(L)=3.24×10^{-5} *5*; α(M)=5.99×10^{-6} *9* α(N)=9.98×10^{-7} *14*; α(O)=5.21×10^{-8} *8*; α(IPF)=0.0001607 *23* %Iγ=1.28 *11*, using the calculated normalization.
1756.0 *5*	1.9 *8*	2182.87	(5/2$^+$,7/2)	426.759	5/2$^+$			%Iγ=0.39 *17*, using the calculated normalization.
1757.1 *1*	14.4 *9*	1963.40	(5/2)$^+$	206.250	9/2$^+$	[E2]	4.85×10^{-4}	α(K)=0.000259 *4*; α(L)=2.94×10^{-5} *5*; α(M)=5.44×10^{-6} *8* α(N)=9.05×10^{-7} *13*; α(O)=4.66×10^{-8} *7*; α(IPF)=0.000190 *3* %Iγ=2.98 *24*, using the calculated normalization.
1758.0 *5*	1.3 *5*	2184.72	(3/2$^+$,5/2)	426.759	5/2$^+$			%Iγ=0.27 *11*, using the calculated normalization.
1759.5 *3*	1.27 *22*	2237.92	(3/2$^+$,5/2)	478.28	(5/2)$^+$			%Iγ=0.26 *5*, using the calculated normalization.
1763.8 *3*	1.3 *3*	2190.50	(3/2$^+$)	426.759	5/2$^+$	[M1]	4.88×10^{-4}	α(K)=0.000277 *4*; α(L)=3.13×10^{-5} *5*; α(M)=5.80×10^{-6} *9* α(N)=9.66×10^{-7} *14*; α(O)=5.04×10^{-8} *7*; α(IPF)=0.0001729 *25* %Iγ=0.27 *7*, using the calculated normalization.
1765.7 *3*	7.9 *16*	1971.87	(5/2)$^+$	206.250	9/2$^+$	[E2]	4.86×10^{-4}	α(K)=0.000257 *4*; α(L)=2.91×10^{-5} *4*; α(M)=5.39×10^{-6} *8* α(N)=8.96×10^{-7} *13*; α(O)=4.62×10^{-8} *7*; α(IPF)=0.000194 *3* %Iγ=1.6 *4*, using the calculated normalization.
1767.0 *2*	2.4 *12*	2193.74	(3/2$^+$,5/2)	426.759	5/2$^+$			%Iγ=0.50 *25*, using the calculated normalization.
1789.5 *3*	1.23 *16*	2015.41	(3/2)	225.873	3/2$^+$			%Iγ=0.25 *4*, using the calculated normalization.
1798.7 *1*	0.97 *15*	2208.45	(5/2$^+$,7/2)	409.74	7/2$^+$			%Iγ=0.20 *4*, using the calculated normalization.
1811.4 *3*	0.68 *15*	2237.92	(3/2$^+$,5/2)	426.759	5/2$^+$			%Iγ=0.14 *4*, using the calculated normalization.
1816.5 *5*	0.71 *17*	2190.50	(3/2$^+$)	373.99	1/2$^-$	[E1]	6.23×10^{-4}	α(K)=0.0001261 *18*; α(L)=1.408×10^{-5} *20*; α(M)=2.60×10^{-6} *4* α(N)=4.33×10^{-7} *6*; α(O)=2.25×10^{-8} *4*; α(IPF)=0.000479 *7* %Iγ=0.15 *4*, using the calculated normalization.
1819.7 *2*	1.32 *13*	2045.54	(3/2)$^-$	225.873	3/2$^+$	[E1]	6.24×10^{-4}	α(K)=0.0001258 *18*; α(L)=1.404×10^{-5} *20*; α(M)=2.59×10^{-6} *4* α(N)=4.31×10^{-7} *6*; α(O)=2.24×10^{-8} *4*; α(IPF)=0.000482 *7* %Iγ=0.27 *3*, using the calculated normalization.
1825.9 *2*	1.6 *3*	2184.72	(3/2$^+$,5/2)	358.584	3/2$^+$			%Iγ=0.33 *7*, using the calculated normalization.
1831.9 *1*	4.7 *9*	2190.50	(3/2$^+$)	358.584	3/2$^+$	[M1]	4.95×10^{-4}	α(K)=0.000257 *4*; α(L)=2.90×10^{-5} *4*; α(M)=5.37×10^{-6} *8* α(N)=8.95×10^{-7} *13*; α(O)=4.67×10^{-8} *7*; α(IPF)=0.000202 *3* %Iγ=0.97 *19*, using the calculated normalization.
1836.2 *1*	7.2 *7*	2093.91	(3/2$^+$)	257.66	(3/2)$^+$	[M1]	4.95×10^{-4}	α(K)=0.000256 *4*; α(L)=2.89×10^{-5} *4*; α(M)=5.35×10^{-6} *8* α(N)=8.90×10^{-7} *13*; α(O)=4.65×10^{-8} *7*; α(IPF)=0.000204 *3* %Iγ=1.49 *16*, using the calculated normalization.
1850.8 *1*	1.80 *20*	2209.40	(3/2$^+$,5/2)	358.584	3/2$^+$			%Iγ=0.37 *5*, using the calculated normalization.
1859.3 *2*	3.4 *3*	2117.00	(3/2$^+$)	257.66	(3/2)$^+$	[M1]	4.99×10^{-4}	α(K)=0.000250 *4*; α(L)=2.82×10^{-5} *4*; α(M)=5.21×10^{-6} *8*

$^{109}_{45}Rh_{64}$-16

^{109}Ru β^- decay 1987Ka29 (continued)

$\gamma(^{109}Rh)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [#]	Comments
								α(N)=8.68×10^{-7} *13*; α(O)=4.54×10^{-8} *7*; α(IPF)=0.000215 *3*
								%Iγ=0.70 *7*, using the calculated normalization.
1860.3 *5*	0.39 *16*	2270.1	(5/2$^+$,7/2)	409.74	7/2$^+$			%Iγ=0.08 *4*, using the calculated normalization.
1868.0 *2*	2.52 *23*	2093.91	(3/2$^+$)	225.873	3/2$^+$	[M1]	5.00×10^{-4}	α(K)=0.000247 *4*; α(L)=2.79×10^{-5} *4*; α(M)=5.17×10^{-6} *8*
								α(N)=8.60×10^{-7} *12*; α(O)=4.49×10^{-8} *7*; α(IPF)=0.000219 *3*
								%Iγ=0.52 *6*, using the calculated normalization.
1879.3 *1*	1.13 *16*	2237.92	(3/2$^+$,5/2)	358.584	3/2$^+$			%Iγ=0.23 *4*, using the calculated normalization.
1891.4 *3*	1.15 *16*	2117.00	(3/2$^+$)	225.873	3/2$^+$	[M1]	5.03×10^{-4}	α(K)=0.000241 *4*; α(L)=2.72×10^{-5} *4*; α(M)=5.04×10^{-6} *7*
								α(N)=8.39×10^{-7} *12*; α(O)=4.38×10^{-8} *7*; α(IPF)=0.000229 *4*
								%Iγ=0.24 *4*, using the calculated normalization.
1892.4 *3*	0.8 *3*	2098.59	(5/2$^+$,7/2)	206.250	9/2$^+$			%Iγ=0.17 *7*, using the calculated normalization.
1929.06 *5*	62 *3*	1929.07	7/2$^+$	0.0	7/2$^+$	[M1]	5.10×10^{-4}	α(K)=0.000232 *4*; α(L)=2.62×10^{-5} *4*; α(M)=4.84×10^{-6} *7*
								α(N)=8.07×10^{-7} *12*; α(O)=4.22×10^{-8} *6*; α(IPF)=0.000246 *4*
								%Iγ=12.8 *9*, using the calculated normalization.
1958.8 *3*	0.91 *13*	2184.72	(3/2$^+$,5/2)	225.873	3/2$^+$			%Iγ=0.19 *3*, using the calculated normalization.
1963.5 *1*	11.3 *9*	1963.40	(5/2)$^+$	0.0	7/2$^+$	[M1]	5.17×10^{-4}	α(K)=0.000224 *4*; α(L)=2.53×10^{-5} *4*; α(M)=4.68×10^{-6} *7*
								α(N)=7.79×10^{-7} *11*; α(O)=4.07×10^{-8} *6*; α(IPF)=0.000262 *4*
								%Iγ=2.34 *22*, using the calculated normalization.
1971.9 *2*	2.04 *22*	1971.87	(5/2)$^+$	0.0	7/2$^+$	[M1]	5.18×10^{-4}	α(K)=0.000222 *4*; α(L)=2.51×10^{-5} *4*; α(M)=4.64×10^{-6} *7*
								α(N)=7.72×10^{-7} *11*; α(O)=4.04×10^{-8} *6*; α(IPF)=0.000266 *4*
								%Iγ=0.42 *5*, using the calculated normalization.
1976.6 *1*	1.76 *21*	2182.87	(5/2$^+$,7/2)	206.250	9/2$^+$			%Iγ=0.36 *5*, using the calculated normalization.
2040.8 *2*	0.91 *15*	2247.07	(5/2$^+$,7/2)	206.250	9/2$^+$			%Iγ=0.19 *4*, using the calculated normalization.
2063.8 *3*	0.23 *5*	2270.1	(5/2$^+$,7/2)	206.250	9/2$^+$			%Iγ=0.048 *11*, using the calculated normalization.
2094.3 *3*	0.50 *9*	2093.91	(3/2$^+$)	0.0	7/2$^+$	[E2]	5.62×10^{-4}	α(K)=0.000187 *3*; α(L)=2.11×10^{-5} *3*; α(M)=3.91×10^{-6} *6*
								α(N)=6.50×10^{-7} *10*; α(O)=3.37×10^{-8} *5*; α(IPF)=0.000349 *5*
								%Iγ=0.103 *20*, using the calculated normalization.
2098.6 *2*	3.8 *3*	2098.59	(5/2$^+$,7/2)	0.0	7/2$^+$			%Iγ=0.79 *8*, using the calculated normalization.
2117.3 *4*	0.22 *9*	2117.00	(3/2$^+$)	0.0	7/2$^+$	[E2]	5.69×10^{-4}	α(K)=0.000184 *3*; α(L)=2.07×10^{-5} *3*; α(M)=3.83×10^{-6} *6*
								α(N)=6.37×10^{-7} *9*; α(O)=3.30×10^{-8} *5*; α(IPF)=0.000360 *5*
								%Iγ=0.045 *19*, using the calculated normalization.
2184.7 *2*	0.74 *11*	2184.72	(3/2$^+$,5/2)	0.0	7/2$^+$			%Iγ=0.153 *24*, using the calculated normalization.
2193.8 *2*	1.69 *17*	2193.74	(3/2$^+$,5/2)	0.0	7/2$^+$			%Iγ=0.35 *4*, using the calculated normalization.
2247.1 *3*	0.77 *12*	2247.07	(5/2$^+$,7/2)	0.0	7/2$^+$			%Iγ=0.16 *3*, using the calculated normalization.

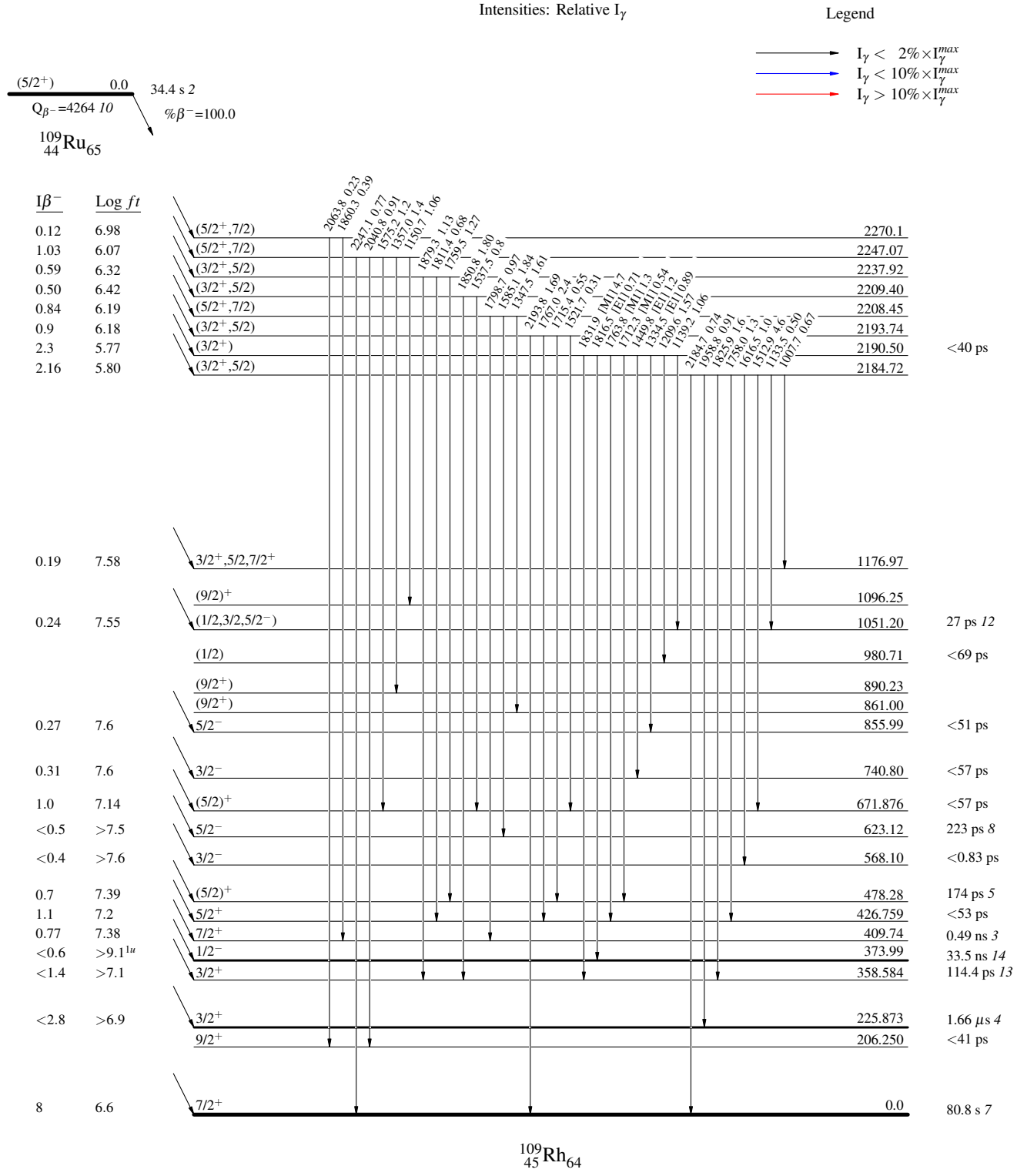
[†] From 1987Ka29.
[‡] From Adopted Gammas.
[#] Additional information 2.
[@] If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[&] For absolute intensity per 100 decays, multiply by 0.207 *11*.

$^{109}_{45}Rh_{64}$-17

^{109}Ru β^- decay 1987Ka29

Decay Scheme

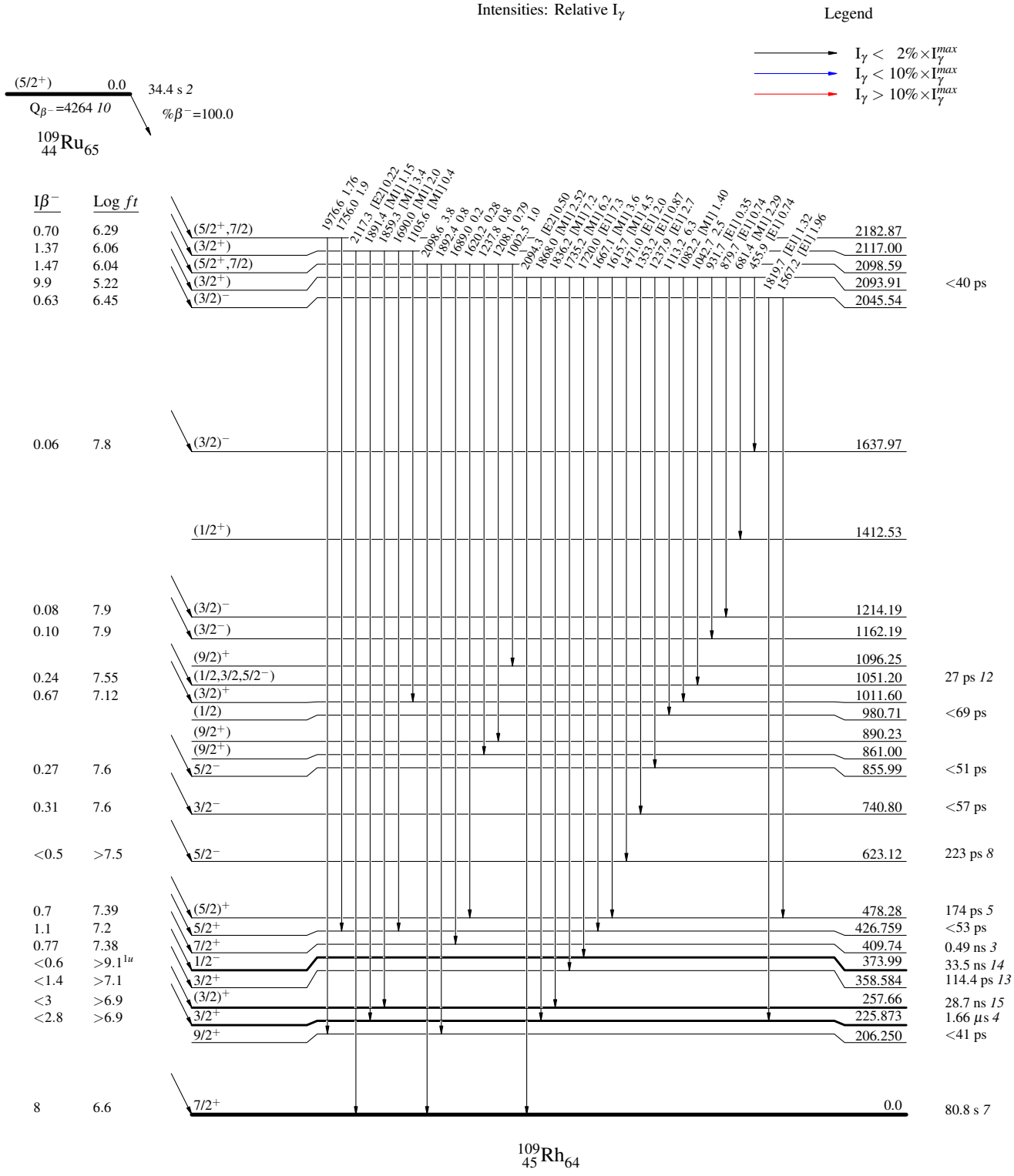
Intensities: Relative I_γ



^{109}Ru β^- decay 1987Ka29

Decay Scheme (continued)

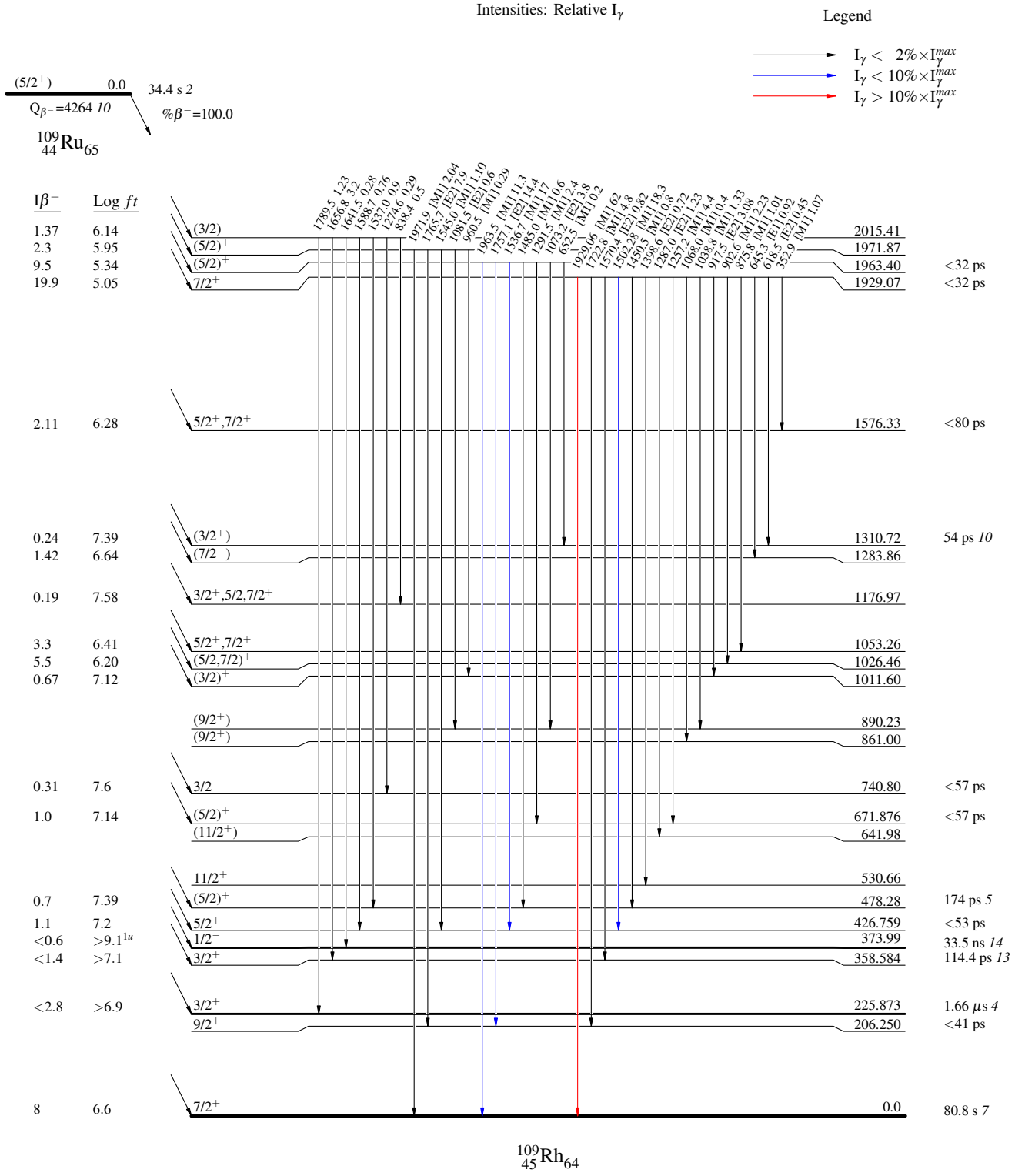
Intensities: Relative I_γ



^{109}Ru β^- decay 1987Ka29

Decay Scheme (continued)

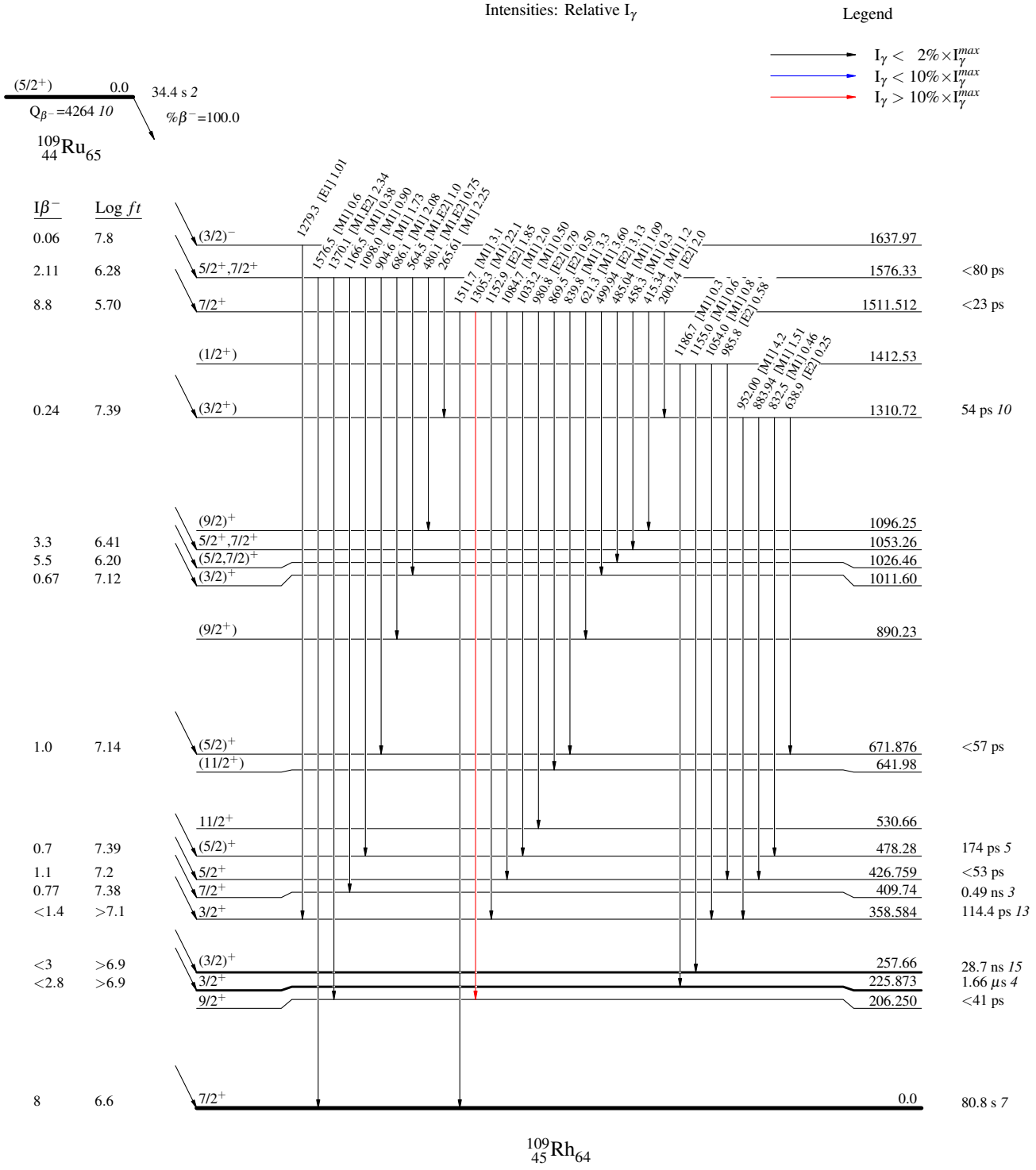
Intensities: Relative I_γ



^{109}Ru β^- decay 1987Ka29

Decay Scheme (continued)

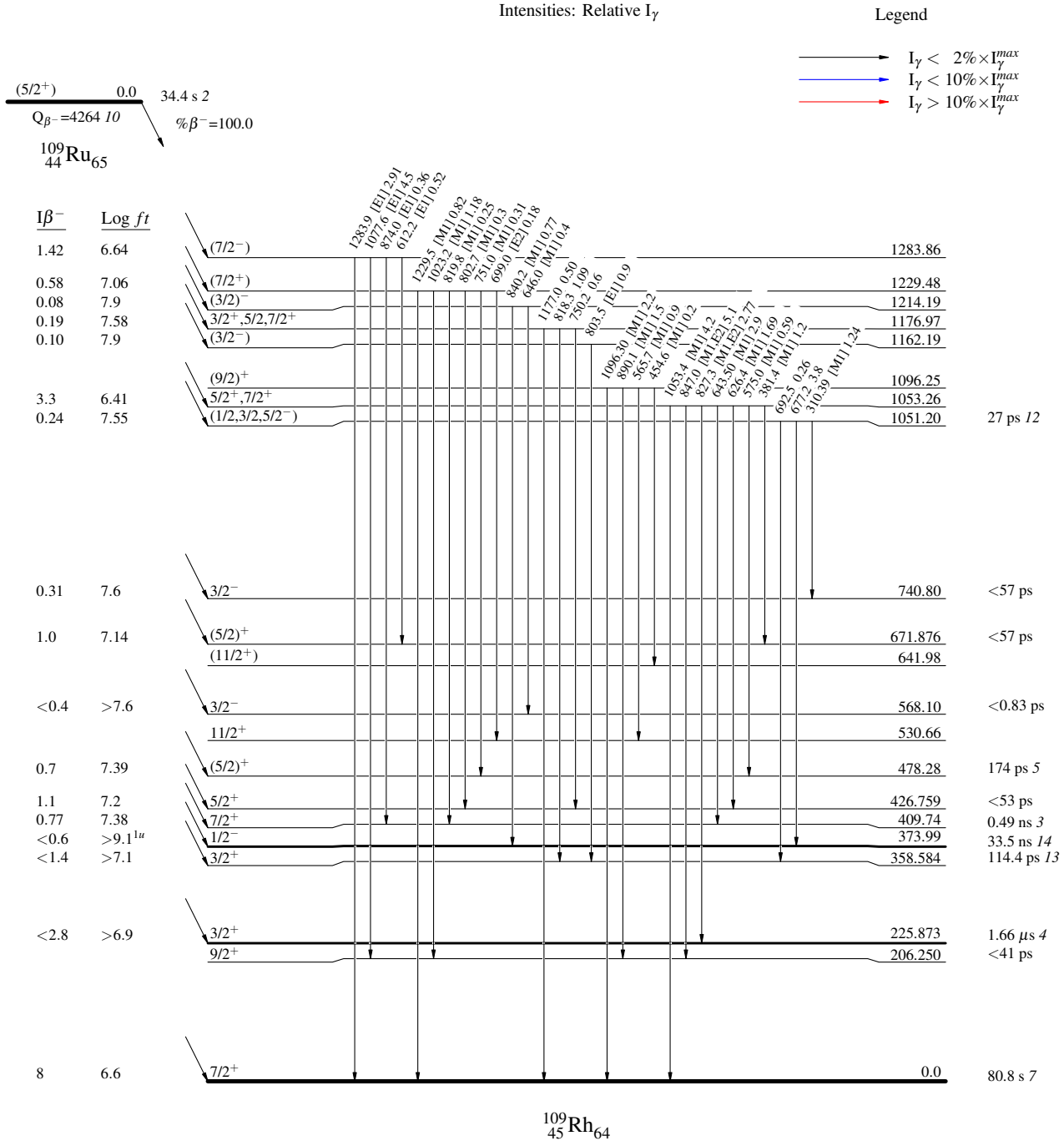
Intensities: Relative I_γ



^{109}Ru β^- decay 1987Ka29

Decay Scheme (continued)

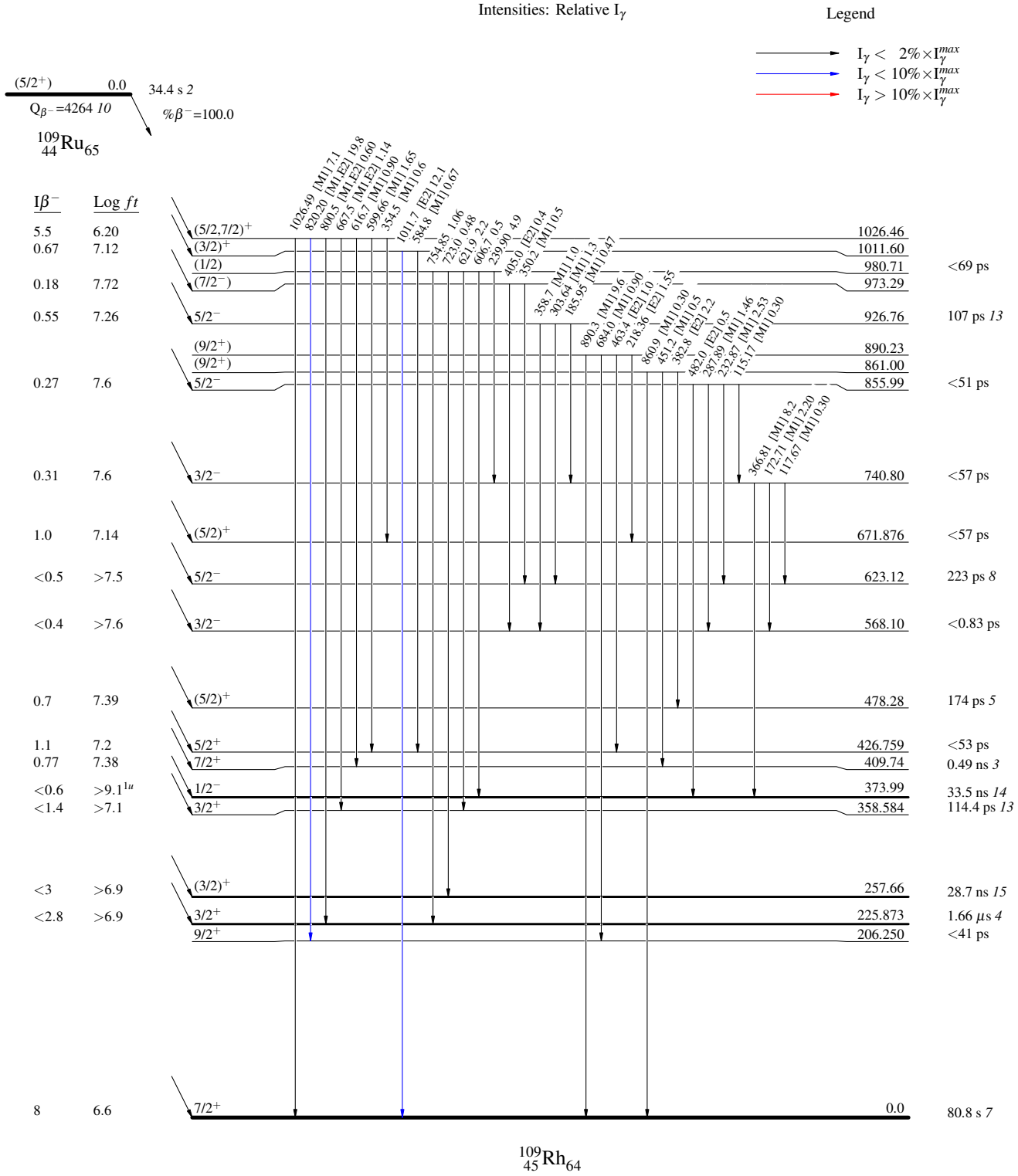
Intensities: Relative I_γ



^{109}Ru β^- decay 1987Ka29

Decay Scheme (continued)

Intensities: Relative I_γ



^{109}Ru β^- decay 1987Ka29

Decay Scheme (continued)

Intensities: Relative I_γ