Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 172, 1 (2021)	31-Jan-2021

Q(β^-)=−378 *25*; S(n)=8081 *19*; S(p)=5255 *18*; Q(α)=−2194 *19* 2017Wa10
S(2n)=18559 *22*, S(2p)=13737 *18* (2017Wa10).
Additional information 1.
Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for ten primary references, nine dealing with nuclear structure calculations and one with decay modes and half-lives.

^{100}Rh Levels

Cross Reference (XREF) Flags

A	^{100}Pd ε decay (3.63 d)	E	^{98}Mo(^{6}Li,4nγ)
B	^{100}Rh IT decay (4.6 min)	F	^{99}Ru(α,2npγ)
C	^{70}Zn(^{36}S,p5nγ)	G	^{100}Ru(p,nγ)
D	^{96}Mo(^{7}Li,3nγ)		

E(level)†	Jπ‡	$T_{1/2}$#	XREF		Comments
0.0	1$^-$	20.5 h *3*	AB	G	%ε+%β^+=100 Jπ: spin from atomic-beam method (1975Ru06,1978Ru04) and parity from M1(84.02γ)-E1(74.78γ) cascade from 1$^+$, 158 level. Proposed configuration=$\pi(g^4_{9/2},p_{1/2})_{1/2-} \otimes \nu(d_{5/2},s_{1/2})_{1/2^+ \text{ or } 3/2^+}$ (1965Ev05). $T_{1/2}$: unweighted average of 20.2 h *1* from 1995KeZZ and 20.8 h *1* from 1953Ma64. Others: 18 h *1* (1964An13), 21 h (1950Su29), 19.4 h 1(1948Li03). Additional information 2.
32.686 *13*	(2)$^-$	27.6 ns *6*	AB	G	Jπ: E1 126.1γ from 1$^+$; M1+E2 32.68γ to 1$^-$. Probable E3 γ from (5$^+$) (see comment for 107.6 isomer). Absence of ε feeding from 0$^+$ suggests J>1. Proposed configuration=$\pi(g^4_{9/2},p_{1/2})_{1/2-} \otimes \nu(d_{5/2},s_{1/2})_{3/2^+ \text{ or } 5/2^+}$ (1965Ev05). $T_{1/2}$: from $\gamma\gamma$(t) in ^{100}Pd ε decay (1979En03). Other: 25.3 ns *31* from γ(t) in (p,nγ) (1983Bi04).
74.782 *14*	(2)$^+$	214.3 ns *20*	AB	G	%IT=100 μ=+4.302 *8* (1966Ma54) Q=0.153 *18* (1996Bl15,2008Py02,2016St14) Jπ: M1 84.0γ from 1$^+$. (84.0γ)(74.8γ)(θ) in ^{100}Pd ε decay rules out J=0 and favors J=2 over J=1. Proposed configuration=$\pi(g^5_{9/2})_{9/2+} \otimes \nu(d_{5/2},s_{1/2})_{5/2+}$ and/or $\pi(g^5_{9/2})_{7/2+} \otimes \nu(d_{5/2},s_{1/2})_{3/2+}$ (1965Ev05). From measured magnetic moment, 1965Ma34 support the second configuration. $T_{1/2}$: weighted average of 217 ns *5* from γ(t) (1983Bi04) in (p,nγ), 213.6 ns *20* (1979En03) and 214.5 ns *20* (1971Re06) from γ(t) in ^{100}Pd ε decay. Others (discrepant): 235 ns *3* (1965Ma34) and 180 ns *20* (1965Ev05) in ^{100}Pd ε decay. 1983Bi04 use γ(t) in (p,nγ), all other references use $\gamma\gamma$(t) in ^{100}Pd ε decay. μ: from g factor measurement using $\gamma\gamma(\theta$,H,t) in ^{100}Pd ε decay with a Knight-shift correction (1966Ma54; value is 4.26 *6* in 1965Ma34). 2014StZZ compilation quotes +4.324 *8*. Other: 4.304 *30* (1971Re06). Q: perturbed angular correlation (cited as 0.153 in theory paper by 1996Bl15 from their paper to appear, yet no further publication seems to have appeared). 2008Py02 use the same value of 0.153. Uncertainty of 0.018 seems to be assigned by 2016St14. Other: Q=0.076 *20* (1979Vi12), estimated value from a comparison of quadrupole interaction frequencies in ^{100}Rh and ^{99}Ru, using Q=0.23 *5* for a 99-keV level in ^{99}Ru.
86.325 *15*	(1,2)	<0.35 ns	A	G	Jπ: 53.7γ (2)$^-$ and 86.3γ to 1$^-$ are not E2 (from RUL); log *ft*>7.8 from 0$^+$ suggests J>1. Negative parity proposed by 1983Bi04 based on lifetime estimates.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{100}Rh Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
107.59 *20*	(5$^+$)	4.6 min *2*	BCDEF	%IT≈98.3; %ε+%β$^+$≈1.7 (1980Ba59) E(level): from the 74.9γ-32.7γ cascade in ^{100}Rh IT decay, although, the decay scheme of the isomer does not seem as well established. However, proposed 74.9-32.7 and 32.7-74.9 cascades as the main decay modes are consistent with mult=E3 and M3 for one of the components of 74.9γ and 32.7γ, respectively. Mult=E1 and M1+E2 for the second component of 74.9γ and 32.7γ, respectively are known from ^{100}Pd ε decay. Jπ: probable E3-M1 cascade to 1$^-$, systematics of odd-odd nuclei in this mass region. Possible configuration=π($g^5_{9/2}$)$_{7/2+}$ ⊗ ν($d_{5/2}$,$s_{1/2}$)$_{3/2+}$, based on similar configurations for other low-lying states proposed by 1965Ev05. $T_{1/2}$: weighted average of 4.7 min *3* (1974Si18), 4.8 min *5* (1978Ki07), 4.5 min *3* (1982MaZP), as also listed in ^{100}Rh IT decay.
136.332 *25*	(1)	<0.35 ns	A G	Jπ: 61.6γ to (2)$^+$ not E2 (from RUL); log *ft*=7.0 from 0$^+$ parent.
139.85 *3*	(0,1)	<0.35 ns	A G	XREF: G(?). Jπ: 139.9γ to 1$^-$ not E2 (from RUL); log *ft*=7.1 from 0$^+$.
151.806 *18*	(1)$^+$	0.97 ns *14*	A G	Jπ: E1 γ to 1$^-$; γ to (2)$^-$; log *ft*=6.6 from 0$^+$.
154.00 *10*	(0,1)		A	Jπ: log *ft*=7.8 *2* from 0$^+$.
158.804 *21*	1$^+$	<0.35 ns	A G	Jπ: log *ft*=4.4 from 0$^+$. Proposed configuration=π($g^5_{9/2}$)$_{7/2+}$ ⊗ ν($d_{5/2}$,$s_{1/2}$)$_{5/2+}$ (1965Ev05). $T_{1/2}$: other: <0.5 ns in ε decay (1979En03).
160.685 *22*	(0$^-$ to 3$^-$)	3.95 ns *21*	G	Jπ: 160.7γ to 1$^-$, 128.0γ to (2)$^-$.
171.094 *21*	(0$^-$ to 4$^-$)	<0.35 ns	G	Jπ: 138.4γ to (2)$^-$.
219.58 *22*	(7$^+$)	132 ns *6*	CDEF	%IT=100 μ=+4.69 *14* (1990Bi03,2014StZZ) Jπ: ΔJ=2, E2 112.0γ to (5$^+$). $T_{1/2}$: unweighted average of 120 ns *5* (1984Ma30) in (^{6}Li,4nγ), 140 ns *5* (1986Du04) in (^{7}Li,3nγ) and 135 ns *20* (1984Ma30) in (α,2npγ). Different charge states of this isomer were produced from the breakup of ^{112}Sn nucleus in heavy-ion collisions (1995Gr14). Lifetime of the isomer in fully-ionized charge state is calculated to be 250 ns (1995Gr14). μ: from g factor=+0.67 *2* (1990Bi03) by PAD method using $T_{1/2}$=140 ns *5* (1986Du04) in (^{7}Li,3nγ). Other: g factor=+0.69 *6* with $T_{1/2}$=165 ns (1986RaZU) in (^{7}Li,3nγ). Configuration=π$g_{9/2}$⊗ν$d_{5/2}$ (1990Bi03) from comparison of measured g factor with model predicted values. Some admixture of Configuration=π$g_{9/2}$⊗ν$g_{7/2}$ cannot be ruled out (1990Bi03).
221.79? *6*	(0 to 3)		G	Jπ: 85.5γ to (1).
243.47 *22*	(6$^+$)		DEF	Jπ: ΔJ=1, M1+E2 135.9γ to (5$^+$).
248.049 *25*	(1,2)$^+$	<0.35 ns	G	Jπ: M1(+E2) 173.3γ to (2)$^+$, 96.2γ to (1)$^+$ not E2 (from RUL).
255.73 *11*	(0,1,2)	<0.35 ns	G	Jπ: 119.4γ to (1) not E2 (from RUL).
281.98 *3*	(1,2,3)$^+$	<0.35 ns	G	Jπ: M1(+E2) 207.2γ to (2)$^+$.
325.17 *13*	(≤3)	<0.35 ns	G	Jπ: 188.9γ to (1).
329.4 *5*		0.76 ns *28*	G	
357.54 *24*	(6$^+$)		DEF	Jπ: ΔJ=1, M1(+E2) 249.9γ to (5$^+$), and ΔJ=1, D+Q 38.1γ to (7$^+$).
376.7 *4*	(0$^-$ to 4$^-$)	<0.35 ns	G	Jπ: 343.9γ to (2)$^-$.
389.7 *4*	(≤4)	0.62 ns *28*	G	Jπ: 303.4γ to (1,2).
438.62 *23*	(7$^+$)		CDEF	Jπ: ΔJ=2, E2 331.0γ to (5$^+$); ΔJ=0, M1(+E2) 218.9γ to (7$^+$).
445.51 *4*	(≤3)	<0.35 ns	G	Jπ: 286.7γ to 1$^+$.
473.2 *5*			G	
517.72 *5*	(≤3)	<0.35 ns	G	Jπ: 365.9γ to (1)$^+$.
531.9 *5*			G	
561.0 *5*			G	
887.1 *3*	(8$^+$)		CDEF	Jπ: ΔJ=1, M1(+E2) 448.4γ to (7$^+$).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{100}Rh Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
1197.6 *4*	(9$^+$)		D	Jπ: ΔJ=2, (E2) 758.8γ to (7$^+$); ΔJ=1, D 310.6γ to (8$^+$).
1270.4[@] *3*	(8$^-$)	<0.1 ps	CDEF	Jπ: ΔJ=0, E1 383.2γ to (8$^+$) and ΔJ=1, E1 1050.9γ to (7$^+$). $T_{1/2}$: from Doppler broadening of 1050γ peak (1984Ma30) in (^{6}Li,4nγ).
1403.5[&] *3*	(9$^-$)		CDEF	Jπ: ΔJ=1, E1 516.3γ to (8$^+$); ΔJ=1, D(+Q) 133.1γ to (8$^-$); band assignment.
1732.8 *6*	(9,10)		D	Jπ: 535.2 D to (9$^+$).
1800.9[@] *4*	(10$^-$)		CDEF	Jπ: ΔJ=1, M1 397.5γ to (9$^-$); band assignment.
2127.5[&] *4*	(11$^-$)		CDEF	Jπ: ΔJ=1, M1(+E2) 326.6γ to (10$^-$); ΔJ=2, (E2) 723.7γ to (9$^-$); band assignment.
2190.3[a] *4*	(10$^-$)		CD	Jπ: 787.0γ to (9$^-$); band assignment.
2546.4[a] *7*	(11$^-$)		C	Jπ: 356γ and 745γ to (10$^-$); band assignment.
2595.9[@] *4*	(12$^-$)		CDEF	Jπ: ΔJ=1, (M1) 468.3γ to (11$^-$); band assignment.
2610.1 *9*	(11$^-$)		C	Jπ: 420γ to (10$^-$); 301γ from (12$^-$).
2910.8[a] *7*	(12$^-$)		C	Jπ: 364γ to (11$^-$) and 721γ to (10$^-$); band assignment.
3064.3[&] *4*	(13$^-$)		CDEF	Jπ: ΔJ=1, (M1) 468.3γ to (12$^-$); (E2) 936.9γ to (11$^-$); band assignment.
3217.8[a] *7*	(13$^-$)		C	Jπ: 307γ and 622γ to (12$^-$); band assignment.
3490.6[a] *7*	(14$^-$)		CDEF	Jπ: M1,E2 426γ to (13$^-$); 895γ to (12$^-$); band assignment.
3580.6[@] *5*	(14$^-$)		CD	XREF: D(?). Jπ: 516.2γ to (13$^-$) and 985γ to (12$^-$); band assignment.
3948.8[&] *7*	(15$^-$)		C EF	Jπ: 368γ to (14$^-$) and 731γ to (13$^-$); band assignment.
4389.9? *18*	(16)		E	Jπ: 441γ to (15$^-$).
4563.0[@] *8*	(16$^-$)		C	Jπ: 614γ to (15$^-$) and 982γ to (14$^-$); band assignment.
4616.0 *9*	(16$^-$)		C	Jπ: 1126γ to (14$^-$) and 667γ to (15$^-$).
5003.7[&] *9*	(17$^-$)		C	Jπ: 1055γ to (15$^-$) and 388γ to (16$^-$); band assignment.
5638.8[@] *10*	(18$^-$)		C	Jπ: 1076γ to (16$^-$) and 635(17$^-$); band assignment.
6174.8[&] *11*	(19$^-$)		C	Jπ: 1171γ to (17$^-$) and 536γ to (18$^-$); band assignment.
6486.7 *11*	(19$^-$)		C	Jπ: 1483γ to (17$^-$) and 848γ to (18$^-$).
6831.7[@] *12*	(20$^-$)		C	Jπ: 1193γ to (18$^-$) and 657γ to (19$^-$); band assignment.
7414.9[&] *13*	(21$^-$)		C	Jπ: 1240γ to (19$^-$) and 583γ to (20$^-$); band assignment.
8041.4[@] *13*	(22$^-$)		C	Jπ: 1210γ to (20$^-$) and 626γ to (21$^-$); band assignment.
9001.7[b] *14*	(23$^-$)		C	Jπ: 1587γ to (21$^-$) and 960γ to (22$^-$); possible bandhead.
9103.1 *14*	(23$^-$)		C	Jπ: 1688γ to (21$^-$) and 1062γ to (22$^-$).
9303.4[@] *17*	(24$^-$)		C	Jπ: 1262γ to (22$^-$); band assignment.
9602.9[b] *15*			C	Jπ: 500γ and 601γ to (23$^-$).
10403.9[b] *18*			C	
10874.4 *20*			C	Jπ: 1571γ to (24$^-$).
11085.9 *18*			C	
11406.9[b] *21*			C	
12697.4 *22*			C	
12922.9[b] *23*			C	
14518.9[b] *25*			C	

[†] From least-squares fit to Eγ values, assuming 1 keV uncertainty when not stated.

[‡] For high spin states (J>5), it is assumed that spin values generally increase with the excitation energy. This assumption is supported by the decay mode of the levels. The assignments are mainly based on γ(θ), γ(lin pol) and ce data.

[#] From γ(t) (1983Bi04) in (p,nγ), unless otherwise noted.

[@] Band(A): $\pi g_{9/2}^{-5}\otimes\nu h_{11/2}$,α=0. Signature inversion analyzed by 2002Ti02.

[&] Band(a): $\pi g_{9/2}^{-5}\otimes\nu h_{11/2}$,α=1. Signature inversion analyzed by 2002Ti02.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{100}Rh Levels (continued)

[a] Band(B): Band based on (10^-). Probable configuration=$\pi(g_{9/2}^{-4}p_{1/2}^{-1})\otimes\nu(d_{5/2}g_{7/2})^5$. 2005Jo20 interpret this band as possible 'chiral' partner of $\pi g_{9/2}^{-5}\otimes\nu h_{11/2}$ band. See also 2006Me06.

[b] Band(C): Band based on (23^-).

Adopted Levels, Gammas (continued)

γ(^{100}Rh)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
32.686	$(2)^-$	32.68 *2*	100	0.0	1^-	M1+E2	0.15 *3*	10.1 *7*	B(M1)(W.u.)=0.00201 *+21−18*; B(E2)(W.u.)=40 *+22−16* α(K)=7.97 *22*; α(L)=1.8 *4*; α(M)=0.34 *7* α(N)=0.052 *11*; α(O)=0.00146 *3* E_γ: weighted average of 32.66 *2* from ^{100}Pd ε decay (3.63 d) and 32.70 *2* from (p,nγ). Others: 32.7 *2* from ^{100}Rh IT decay (4.6 min) and (^{6}Li,4nγ).
74.782	$(2)^+$	42.09 *2*	13.8 *9*	32.686	$(2)^-$	[E1]		1.694	B(E1)(W.u.)=1.59×10^{-6} *9* α(K)=1.462 *21*; α(L)=0.190 *3*; α(M)=0.0350 *5* α(N)=0.00556 *8*; α(O)=0.000207 *3* E_γ: weighted average of 42.08 *2* from ^{100}Pd ε decay (3.63 d) and 42.10 *2* from (p,nγ). Others: 42.1 *2* from ^{100}Rh IT decay (4.6 min) and 42.1 *2* from (^{6}Li,4nγ). I_γ: weighted average of 14.7 *9* from ^{100}Pd ε decay (3.63 d) and 13.0 *8* from (p,nγ). Other: 9.1 from (^{6}Li,4nγ), 13.8 from ^{100}Rh IT decay.
		74.78 *2*	100 *2*	0.0	1^-	E1		0.336	B(E1)(W.u.)=2.05×10^{-6} *4* α(K)=0.293 *5*; α(L)=0.0357 *5*; α(M)=0.00657 *10* α(N)=0.001061 *15*; α(O)=4.48×10^{-5} *7* E_γ: from ^{100}Pd ε decay (3.63 d) and (p,nγ). Others: 74.9 *2* from (^{6}Li,4nγ) and ^{100}Rh IT decay. I_γ: from (p,nγ). Other: 100 *6* from ^{100}Pd ε decay.
86.325	(1,2)	53.66 *2*	65.9 *16*	32.686	$(2)^-$	[D]		1.4 *6*	α(K)=1.3 *6*; α(L)=0.16 *7*; α(M)=0.029 *12*; α(N)=0.0047 *20*; α(O)=0.00022 *12* E_γ,I_γ: from (p,nγ). Other: Eγ=53.52 *15* from ^{100}Pd ε decay, Iγ=159 *40* in ^{100}Pd ε decay is discrepant. However, 86.3 level is very weakly populated in ε decay.
		86.33 *2*	100 *3*	0.0	1^-	[D]		0.37 *15*	α(K)=0.32 *13*; α(L)=0.039 *16*; α(M)=0.007 *3*; α(N)=0.0012 *5*; α(O)=6.E−5 *3* E_γ,I_γ: from (p,nγ). Other: Eγ=86.37 *15* and Iγ=100 *40* from ^{100}Pd ε decay.
107.59	(5^+)	32.7[b] *2*	0.11	74.782	$(2)^+$	[M3]		5.76×10^3 *20*	B(M3)(W.u.)=0.24 α(K)=2.07×10^3 *5*; α(L)=2.96×10^3 *12*; α(M)=631 *25* α(N)=98 *4*; α(O)=2.03 *8* E_γ,I_γ: from ^{100}Rh IT decay.
		74.9 *2*	100	32.686	$(2)^-$	[E3]		51.6 *10*	B(E3)(W.u.)=0.0095 α(K)=21.1 *4*; α(L)=24.8 *6*; α(M)=4.94 *11* α(N)=0.730 *16*; α(O)=0.00252 *5* E_γ,I_γ: from ^{100}Rh IT decay.
136.332	(1)	61.55 *2*	100	74.782	$(2)^+$	[D]		1.0 *4*	α(K)=0.8 *4*; α(L)=0.10 *5*; α(M)=0.019 *8*; α(N)=0.0032 *14*; α(O)=0.00015 *8* E_γ: weighted average of 61.60 *5* from ^{100}Pd ε decay (3.63 d) and 61.54 *2* from (p,nγ).

$^{100}_{45}Rh_{55}$-5

Adopted Levels, Gammas (continued)

γ(^{100}Rh) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	α[@]	$I_{(\gamma+ce)}$	Comments
139.85	(0,1)	139.85 *3*	100	0.0	1^-	[D]	0.10 *4*		α(K)=0.08 *4*; α(L)=0.010 *5*; α(M)=0.0019 *8*; α(N)=0.00031 *14*; α(O)=1.5×10^{-5} *7* E_γ: weighted average of 139.92 *5* from ^{100}Pd ε decay (3.63 d) and 139.84 *2* from (p,nγ).
151.806	$(1)^+$	(15.5)		136.332	(1)			80 *3*	E_γ: γ required by γγ data in (p,nγ). $I_{(\gamma+ce)}$: estimated (evaluators) from branching ratio in (p,nγ) (1983Bi04).
		65.5[†b]	<6[†]	86.325	(1,2)	[D]	0.8 *4*		α(K)=0.7 *3*; α(L)=0.09 *4*; α(M)=0.016 *7*; α(N)=0.0027 *11*; α(O)=0.00013 *7*
		119.19 *8*	21 *8*	32.686	$(2)^-$	[E1]	0.0881		B(E1)(W.u.)=1.9×10^{-5} *+13−9* α(K)=0.0770 *11*; α(L)=0.00913 *13*; α(M)=0.001684 *24* α(N)=0.000275 *4*; α(O)=1.240×10^{-5} *18* E_γ: weighted average of 119.18 *8* from ^{100}Pd ε decay (3.63 d) and 119.2 *1* from (p,nγ). I_γ: from ^{100}Pd ε decay. Other: <43 from (p,nγ).
		151.80 *2*	100 *8*	0.0	1^-	E1	0.0440		B(E1)(W.u.)=4.4×10^{-5} *+14−10* α(K)=0.0385 *6*; α(L)=0.00452 *7*; α(M)=0.000835 *12* α(N)=0.0001366 *20*; α(O)=6.33×10^{-6} *9* E_γ: weighted average of 151.88 *5* from ^{100}Pd ε decay (3.63 d) and 151.79 *2* from (p,nγ). I_γ: from ^{100}Pd ε decay.
154.00	(0,1)	154.00 *10*	100	0.0	1^-	[D,E2]	0.17 *12*		E_γ: from ^{100}Pd ε decay.
158.804	1^+	72.52 *10*	0.15 *4*	86.325	(1,2)	[D]	0.61 *25*		α(K)=0.53 *22*; α(L)=0.07 *3*; α(M)=0.012 *5*; α(N)=0.0020 *9*; α(O)=9.E−5 *5* E_γ,I_γ: from ^{100}Pd ε decay.
		84.01 *2*	100 *3*	74.782	$(2)^+$	M1	0.561		B(M1)(W.u.)>0.059 α(K)=0.488 *7*; α(L)=0.0598 *9*; α(M)=0.01113 *16* α(N)=0.00184 *3*; α(O)=9.15×10^{-5} *13* E_γ: weighted average of 84.00 *2* from ^{100}Pd ε decay (3.63 d) and 84.02 *2* from (p,nγ). I_γ: from (p,nγ). Other: 100 *6* from ^{100}Pd ε decay.
		126.10 *5*	15.5 *7*	32.686	$(2)^-$	E1	0.0749		B(E1)(W.u.)>3.7×10^{-5} α(K)=0.0655 *10*; α(L)=0.00775 *11*; α(M)=0.001430 *20* α(N)=0.000233 *4*; α(O)=1.060×10^{-5} *15* E_γ: unweighted average of 126.15 *2* from ^{100}Pd ε decay (3.63 d) and 126.05 *3* from (p,nγ). I_γ: weighted average of 15.0 *10* from ^{100}Pd ε decay (3.63 d) and 15.8 *7* from (p,nγ).
		158.87 *5*	3.2 *2*	0.0	1^-	[E1]	0.0386		B(E1)(W.u.)>3.7×10^{-6} α(K)=0.0338 *5*; α(L)=0.00397 *6*; α(M)=0.000732 *11* α(N)=0.0001199 *17*; α(O)=5.58×10^{-6} *8* E_γ,I_γ: from ^{100}Pd ε decay. Other: Iγ<3.7 from (p,nγ).

$^{100}_{45}Rh_{55}$-6

Adopted Levels, Gammas (continued)

γ(^{100}Rh) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
160.685	(0⁻ to 3⁻)	74.40[†] *10*	≈133[†]	86.325	(1,2)				
		128.00[†] *3*	93[†] *7*	32.686	(2)⁻				
		160.68[†] *3*	100[†] *7*	0.0	1⁻				
171.094	(0⁻ to 4⁻)	84.79[†] *2*	100[†] *3*	86.325	(1,2)				
		138.36[†] *3*	47[†] *3*	32.686	(2)⁻				
219.58	(7⁺)	112.0 *1*	100	107.59	(5⁺)	E2		0.898	B(E2)(W.u.)=4.65 *22* α(K)=0.716 *11*; α(L)=0.1492 *22*; α(M)=0.0283 *5* α(N)=0.00439 *7*; α(O)=0.0001065 *16* E_γ: from (^{7}Li,3nγ). Other: 111.9 *2* from (^{6}Li,4nγ). Mult.: Q from γ(θ) in (^{7}Li,3nγ) and M2 ruled out by RUL.
221.79?	(0 to 3)	85.46[†] *5*	100	136.332	(1)				
243.47	(6⁺)	135.9 *1*	100	107.59	(5⁺)	M1+E2	+0.38 *8*	0.185 *15*	α(K)=0.158 *12*; α(L)=0.022 *3*; α(M)=0.0041 *5* α(N)=0.00067 *8*; α(O)=2.79×10^{-5} *17* E_γ: weighted average of 136.0 *1* from (^{7}Li,3nγ) and 135.7 *2* from (^{6}Li,4nγ). Mult.,δ: from γ(θ) in (^{7}Li,3nγ) and RUL. For δ=0.38, E1+M2 is ruled out by RUL since 136γ appears strongly in prompt spectrum.
248.049	(1,2)⁺	96.24[†] *3*	35[†] *2*	151.806	(1)⁺				
		111.9[†]	<7[†]	136.332	(1)				
		173.27[†] *3*	100[†] *4*	74.782	(2)⁺	M1(+E2)	<0.6	0.091 *15*	B(M1)(W.u.)>0.0057 α(K)=0.078 *13*; α(L)=0.0103 *24*; α(M)=0.0019 *5* α(N)=0.00031 *7*; α(O)=1.40×10^{-5} *17* Mult.,δ: from ce data in (p,nγ).
255.73	(0,1,2)	119.4[†] *1*	100	136.332	(1)				E_γ: Unresolved peak in (p,nγ).
281.98	(1,2,3)⁺	26.2[†][b]	<11[†]	255.73	(0,1,2)				
		207.20[†] *3*	100[†] *7*	74.782	(2)⁺	M1(+E2)	<0.4	0.051 *4*	α(K)=0.044 *3*; α(L)=0.0055 *6*; α(M)=0.00102 *11* α(N)=0.000168 *17*; α(O)=8.1×10^{-6} *5* B(M1)(W.u.)>0.0052 Mult.,δ: from ce data in (p,nγ).
325.17	(≤3)	43.19[†] *12*	100[†] *43*	281.98	(1,2,3)⁺				
		188.9[†]	≈230[†]	136.332	(1)				
329.4		158.3[†] *5*		171.094	(0⁻ to 4⁻)				
357.54	(6⁺)	138.1 *2*	76 *14*	219.58	(7⁺)	D(+Q)	+0.05 *+3−8*		E_γ: from (^{7}Li,3nγ). Other: 138.0 *2* from (^{6}Li,4nγ). I_γ: unweighted average of 62 *7* from (^{7}Li,3nγ) and 90 *8* from (^{6}Li,4nγ).
		249.9 *2*	100 *10*	107.59	(5⁺)	M1(+E2)	−0.08 *+12−5*	0.0289 *5*	α(K)=0.0253 *4*; α(L)=0.00301 *6*; α(M)=0.000560 *11*

$^{100}_{45}Rh_{55}$-7

Adopted Levels, Gammas (continued)

γ(^{100}Rh) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
									α(N)=9.30×10^{-5} *17*; α(O)=4.69×10^{-6} *8* E_γ,I_γ: from (^{7}Li,3nγ) and (^{6}Li,4nγ). δ: other: α(K)exp in (^{7}Li,3nγ) gives δ<0.65.
376.7	(0$^-$ to 4$^-$)	290.5[†] *5*		86.325	(1,2)				
		343.9[†] *5*		32.686	(2)$^-$				
389.7	(≤4)	218.5[†] *5*		171.094	(0$^-$ to 4$^-$)				
		303.4[†] *5*		86.325	(1,2)				
438.62	(7$^+$)	81.1 *1*	27 *5*	357.54	(6$^+$)	D+Q			E_γ: weighted average of 81.1 *1* from (^{7}Li,3nγ) and 81.1 *2* from (^{6}Li,4nγ). I_γ: weighted average of 28 *5* from (^{6}Li,4nγ) and 26 *5* from (α,2npγ). Other: 6.9 *20* from (^{7}Li,3nγ) is discrepant.
		195.2 *2*	100 *10*	243.47	(6$^+$)	M1(+E2)	<0.09	0.0553 *9*	α(K)=0.0483 *8*; α(L)=0.00580 *10*; α(M)=0.001079 *18* α(N)=0.000179 *3*; α(O)=8.99×10^{-6} *14* E_γ: weighted average of 195.2 *2* from (^{7}Li,3nγ) and 195.1 *2* from (^{6}Li,4nγ). I_γ: from (^{7}Li,3nγ) and (^{6}Li,4nγ). Other: 100 *17* from (α,2npγ).
		218.9 *2*	15.9 *20*	219.58	(7$^+$)	M1(+E2)	+0.27 *+9−45*	0.0435 *21*	α(K)=0.0379 *17*; α(L)=0.0047 *3*; α(M)=0.00087 *6* α(N)=0.000143 *9*; α(O)=6.94×10^{-6} *25* E_γ: weighted average of 218.8 *3* from (^{36}S,p5nγ), 218.8 *2* from (^{7}Li,3nγ), and 219.1 *2* from (^{6}Li,4nγ). I_γ: weighted average of 15.7 *20* from (^{7}Li,3nγ), 16 *3* from (^{6}Li,4nγ), and 20 *9* from (α,2npγ). Mult.: ΔJ=0 from γ(θ) (1986Du04) in (^{7}Li,3nγ).
		331.0 *3*	15.2 *20*	107.59	(5$^+$)	E2		0.0204	α(K)=0.0175 *3*; α(L)=0.00235 *4*; α(M)=0.000438 *7* α(N)=7.10×10^{-5} *11*; α(O)=2.98×10^{-6} *5* E_γ: weighted average of 331.1 *3* from (^{7}Li,3nγ) and 330.9 *2* from (^{6}Li,4nγ). I_γ: weighted average of 15.7 *20* from (^{7}Li,3nγ), 16 *3* from (^{6}Li,4nγ), and 12 *4* from (α,2npγ).
445.51	(≤3)	163.55[†] *5*	9.2[†] *17*	281.98	(1,2,3)$^+$				
		286.70[†] *3*	100[†] *7*	158.804	1$^+$				
		309.2[†]	≈19[†]	136.332	(1)				
473.2		312.5[†] *5*		160.685	(0$^-$ to 3$^-$)				
517.72	(≤3)	192.2[†*b*]	<6[†]	325.17	(≤3)				
		365.91[†] *4*	100[†] *7*	151.806	(1)$^+$				

Adopted Levels, Gammas (continued)

γ(^{100}Rh) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
531.9		360.8[†] *5*		171.094	(0$^-$ to 4$^-$)				
561.0		389.9[†] *5*		171.094	(0$^-$ to 4$^-$)				
887.1	(8$^+$)	448.4 *2*	100	438.62	(7$^+$)	M1(+E2)	<0.12	0.00664	α(K)=0.00581 *9*; α(L)=0.000679 *10*; α(M)=0.0001261 *18* α(N)=2.10×10^{-5} *3*; α(O)=1.072×10^{-6} *15* E_γ: from (^{7}Li,3nγ) and (^{6}Li,4nγ).
1197.6	(9$^+$)	310.6 *3*	37 *5*	887.1	(8$^+$)	D			E_γ,I_γ: from (^{7}Li,3nγ) only.
		758.8 *3*	100 *11*	438.62	(7$^+$)	(E2)		0.00182	α(K)=0.001590 *23*; α(L)=0.000190 *3*; α(M)=3.52×10^{-5} *5* α(N)=5.82×10^{-6} *9*; α(O)=2.84×10^{-7} *4* E_γ,I_γ: from (^{7}Li,3nγ) only.
1270.4	(8$^-$)	383.2 *2*	27 *5*	887.1	(8$^+$)	E1		0.00345	B(E1)(W.u.)>0.007 α(K)=0.00303 *5*; α(L)=0.000349 *5*; α(M)=6.46×10^{-5} *9* α(N)=1.067×10^{-5} *15*; α(O)=5.28×10^{-7} *8* E_γ: weighted average of 383.2 *3* from (^{7}Li,3nγ) and 383.2 *2* from (^{6}Li,4nγ). I_γ: weighted average of 39 *7* from (^{7}Li,3nγ), 22 *4* from (^{6}Li,4nγ), and 31 *13* from (α,2npγ). Mult.: ΔJ=0 from γ(θ) (1986Du04) in (^{7}Li,3nγ).
		831.9 *2*	36 *9*	438.62	(7$^+$)	E1(+M2)	<0.011	5.80×10^{-4}	B(E1)(W.u.)>0.0009 α(K)=0.000510 *8*; α(L)=5.78×10^{-5} *8*; α(M)=1.068×10^{-5} *15* α(N)=1.773×10^{-6} *25*; α(O)=9.05×10^{-8} *13* E_γ: weighted average of 832.0 *3* from (^{7}Li,3nγ) and 831.8 *2* from (^{6}Li,4nγ). I_γ: unweighted average of 45 *7* from (^{7}Li,3nγ) and 27 *5* from (^{6}Li,4nγ). δ: from RUL(M2)=1 and $T_{1/2}$<0.1 ps. From γ(θ) data in (^{7}Li,3nγ), 1986Du04 give +0.27 *5*, but the authors point out that the apparent large δ is probably due to a γ ray from an unidentified impurity.
		1050.9 *3*	100 *5*	219.58	(7$^+$)	E1		3.67×10^{-4}	B(E1)(W.u.)>0.0015 α(K)=0.000323 *5*; α(L)=3.64×10^{-5} *6*; α(M)=6.73×10^{-6} *10* α(N)=1.118×10^{-6} *16*; α(O)=5.75×10^{-8} *8* E_γ: weighted average of 1050.4 *3* from (^{7}Li,3nγ) and 1051.1 *2* from (^{6}Li,4nγ). I_γ: from (^{6}Li,4nγ). Others: 100 *10* from (^{7}Li,3nγ) and 100 *16* from (α,2npγ).
1403.5	(9$^-$)	133.1 *2*	100 *10*	1270.4	(8$^-$)	D(+Q)	−0.06 *+9−3*		E_γ: weighted average of 133.1 *2* from (^{7}Li,3nγ) and

$^{100}_{45}Rh_{55}$-9

Adopted Levels, Gammas (continued)

γ(^{100}Rh) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	α[@]	Comments
								133.0 *2* from (^{6}Li,4nγ).
								I_γ: from (^{6}Li,4nγ). Other: 100 *12* from (^{7}Li,3nγ).
1403.5	(9$^-$)	516.3[&] *2*	26 *5*	887.1	(8$^+$)	E1	1.66×10^{-3}	α(K)=0.001453 *21*; α(L)=0.0001665 *24*; α(M)=3.08×10^{-5} *5* α(N)=5.10×10^{-6} *8*; α(O)=2.56×10^{-7} *4* E_γ: weighted average of 516.2 *3* from (^{7}Li,3nγ) and 516.4 *2* from (^{6}Li,4nγ). I_γ: weighted average of 23 *3* from (^{7}Li,3nγ) and 34 *5* from (^{6}Li,4nγ).
1732.8	(9,10)	535.2 *4*	100	1197.6	(9$^+$)	D		E_γ: from (^{7}Li,3nγ) only.
1800.9	(10$^-$)	397.5 *2*	100	1403.5	(9$^-$)	M1	0.00890	α(K)=0.00779 *11*; α(L)=0.000914 *13*; α(M)=0.0001696 *24* α(N)=2.82×10^{-5} *4*; α(O)=1.440×10^{-6} *21* E_γ: from (^{7}Li,3nγ) and (^{6}Li,4nγ).
		530[‡]		1270.4	(8$^-$)			
2127.5	(11$^-$)	326.6 *2*	100 *11*	1800.9	(10$^-$)	M1(+E2)	0.018 *4*	α(K)=0.015 *3*; α(L)=0.0020 *5*; α(M)=0.00037 *9* α(N)=6.0×10^{-5} *14*; α(O)=2.7×10^{-6} *4* E_γ: weighted average of 326.6 *3* from (^{7}Li,3nγ) and 326.6 *2* from (^{6}Li,4nγ). I_γ: from (^{6}Li,4nγ). Other: 100 *13* from (^{7}Li,3nγ).
		723.7 *4*	53 *7*	1403.5	(9$^-$)	(E2)	0.00205	α(K)=0.00179 *3*; α(L)=0.000215 *3*; α(M)=3.99×10^{-5} *6* α(N)=6.58×10^{-6} *10*; α(O)=3.19×10^{-7} *5* E_γ: weighted average of 723.8 *4* from (^{7}Li,3nγ) and 723 *1* from (^{6}Li,4nγ). I_γ: weighted average of 53 *7* from (^{7}Li,3nγ) and 52 *8* from (^{6}Li,4nγ).
2190.3	(10$^-$)	389[‡]		1800.9	(10$^-$)			
		787.0 *3*		1403.5	(9$^-$)			E_γ: from (^{7}Li,3nγ).
2546.4	(11$^-$)	356[‡]		2190.3	(10$^-$)			
		745[‡]		1800.9	(10$^-$)			
2595.9	(12$^-$)	468.3[a] *2*	100[a] *33*	2127.5	(11$^-$)	(M1)	0.00597	α(K)=0.00522 *8*; α(L)=0.000610 *9*; α(M)=0.0001131 *16* α(N)=1.88×10^{-5} *3*; α(O)=9.64×10^{-7} *14* E_γ: weighted average of 468.4 *2* from (^{7}Li,3nγ) and 468.2 *2* from (^{6}Li,4nγ). I_γ: from (^{7}Li,3nγ).
		795.1 *5*	12 *4*	1800.9	(10$^-$)			E_γ,I_γ: from (^{7}Li,3nγ).
2610.1	(11$^-$)	420[‡]		2190.3	(10$^-$)			
2910.8	(12$^-$)	301[‡]		2610.1	(11$^-$)			
		364[‡]		2546.4	(11$^-$)			
		721[‡]		2190.3	(10$^-$)			
		783[‡]		2127.5	(11$^-$)			
3064.3	(13$^-$)	468.3[a] *2*	<62[a]	2595.9	(12$^-$)	(M1)	0.00597	α(K)=0.00522 *8*; α(L)=0.000610 *9*; α(M)=0.0001131 *16*

$^{100}_{45}Rh_{55}$-10

Adopted Levels, Gammas (continued)

γ(^{100}Rh) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[#]	α[@]	Comments
								α(N)=1.88×10^{-5} *3*; α(O)=9.64×10^{-7} *14* E_γ: weighted average of 468.4 *2* from (^{7}Li,3nγ) and 468.2 *2* from (^{6}Li,4nγ). E_γ,I_γ: from (^{7}Li,3nγ).
3064.3	(13$^-$)	936.9 *2*	100 *23*	2127.5	(11$^-$)	(E2)	1.10×10^{-3}	α(K)=0.000959 *14*; α(L)=0.0001125 *16*; α(M)=2.09×10^{-5} *3* α(N)=3.45×10^{-6} *5*; α(O)=1.718×10^{-7} *24* E_γ: weighted average of 937.0 *3* from (^{7}Li,3nγ) and 936.9 *2* from (^{6}Li,4nγ). I_γ: from (^{7}Li,3nγ). Mult.: ce data give mult=M1,E2, but E2 consistent with band assignment.
3217.8	(13$^-$)	307‡		2910.8	(12$^-$)			
		622‡		2595.9	(12$^-$)			
3490.6	(14$^-$)	273‡		3217.8	(13$^-$)			
		426 *1*		3064.3	(13$^-$)	M1,E2	0.0083 *9*	α(K)=0.0072 *7*; α(L)=0.00089 *13*; α(M)=0.000166 *23* α(N)=2.7×10^{-5} *4*; α(O)=1.29×10^{-6} *9* E_γ: from (^{7}Li,3nγ) and (^{6}Li,4nγ). Mult.: from α(K)exp in (^{7}Li,3nγ).
		895‡		2595.9	(12$^-$)			
3580.6	(14$^-$)	516.2[&] *3*		3064.3	(13$^-$)			E_γ: from (^{7}Li,3nγ).
		985‡		2595.9	(12$^-$)			
3948.8	(15$^-$)	368‡		3580.6	(14$^-$)			
		458 *1*		3490.6	(14$^-$)			E_γ: from (^{6}Li,4nγ).
		731‡		3217.8	(13$^-$)			
		885‡		3064.3	(13$^-$)			
4389.9?	(16)	441[b] *1*		3948.8	(15$^-$)			E_γ: from (^{6}Li,4nγ) only.
4563.0	(16$^-$)	614‡		3948.8	(15$^-$)			
		982‡		3580.6	(14$^-$)			
4616.0	(16$^-$)	667‡		3948.8	(15$^-$)			
		1126‡		3490.6	(14$^-$)			
5003.7	(17$^-$)	388‡		4616.0	(16$^-$)			
		440‡		4563.0	(16$^-$)			
		1055‡		3948.8	(15$^-$)			
5638.8	(18$^-$)	635‡		5003.7	(17$^-$)			
		1076‡		4563.0	(16$^-$)			
6174.8	(19$^-$)	536‡		5638.8	(18$^-$)			
		1171‡		5003.7	(17$^-$)			
6486.7	(19$^-$)	848‡		5638.8	(18$^-$)			
		1483‡		5003.7	(17$^-$)			
6831.7	(20$^-$)	657‡		6174.8	(19$^-$)			

$^{100}_{45}Rh_{55}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{100}Rh)$ (continued)

E_i(level)	J_i^π	E_γ	E_f	J_f^π	E_i(level)	J_i^π	E_γ	E_f	J_f^π	E_i(level)	E_γ	E_f
6831.7	(20^-)	1193‡	5638.8	(18^-)	9103.1	(23^-)	1062‡	8041.4	(22^-)	11085.9	1483‡	9602.9
7414.9	(21^-)	583‡	6831.7	(20^-)			1688‡	7414.9	(21^-)	11406.9	1003‡	10403.9
		1240‡	6174.8	(19^-)	9303.4	(24^-)	1262‡	8041.4	(22^-)	12697.4	1823‡	10874.4
8041.4	(22^-)	626‡	7414.9	(21^-)	9602.9		500‡	9103.1	(23^-)	12922.9	1516‡	11406.9
		1210‡	6831.7	(20^-)			601‡	9001.7	(23^-)	14518.9	1596‡	12922.9
9001.7	(23^-)	960‡	8041.4	(22^-)	10403.9		801‡	9602.9				
		1587‡	7414.9	(21^-)	10874.4		1571‡	9303.4	(24^-)			

† From (p,nγ) only.
‡ From (^{36}S,p5nγ) only.
# From ce data in ^{100}Pd ε decay for low spin states (J<5). For high spin states (J>5), mult assignments and δ values are from ce, γ(θ) and γ(lin pol) data in ^{96}Mo(^{7}Li,3nγ). Exceptions are noted.
@ 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.
& Multiply placed.
a Multiply placed with intensity suitably divided.
b Placement of transition in the level scheme is uncertain.

$^{100}_{45}Rh_{55}$-12

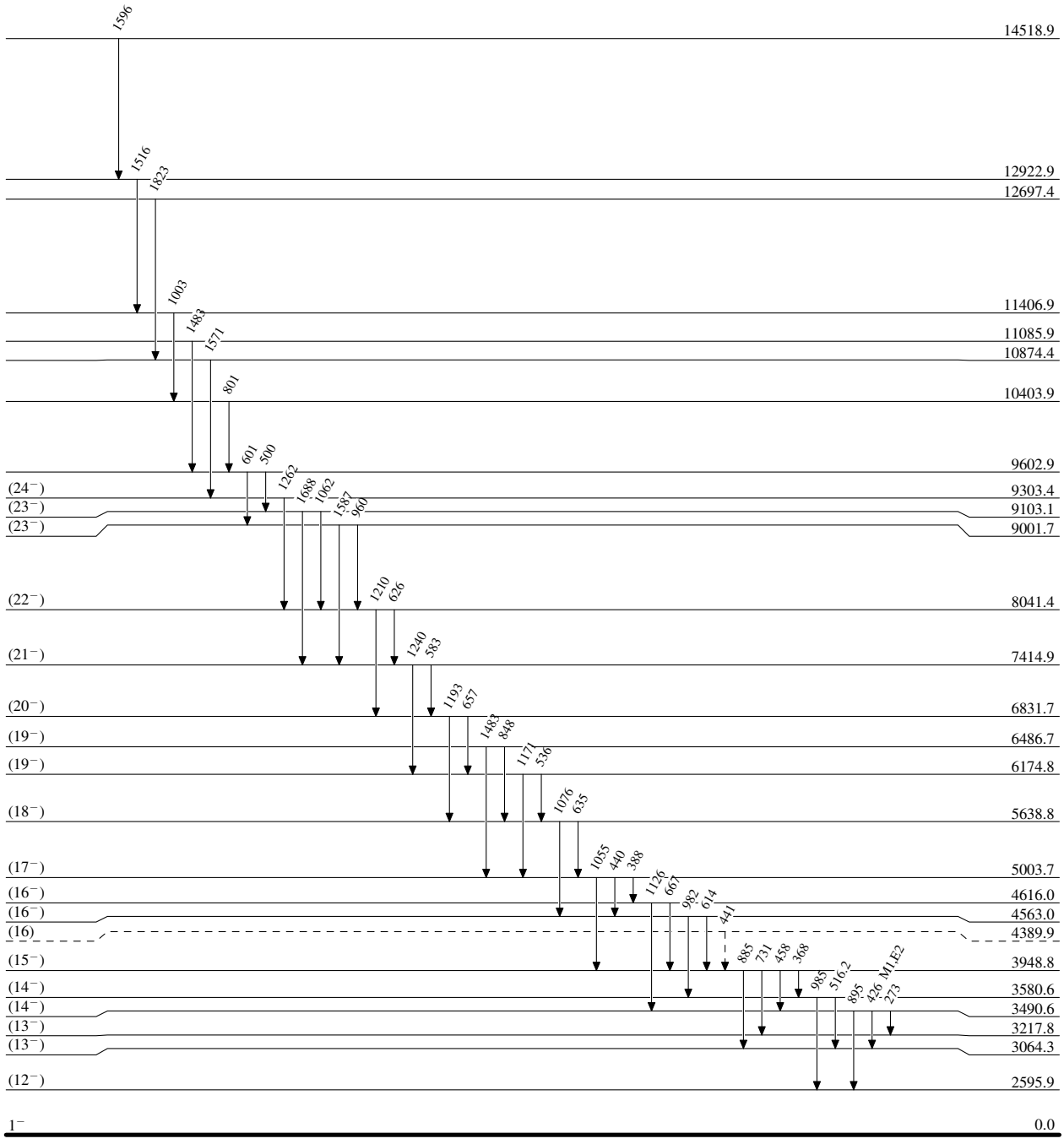
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{100}_{45}Rh_{55}$

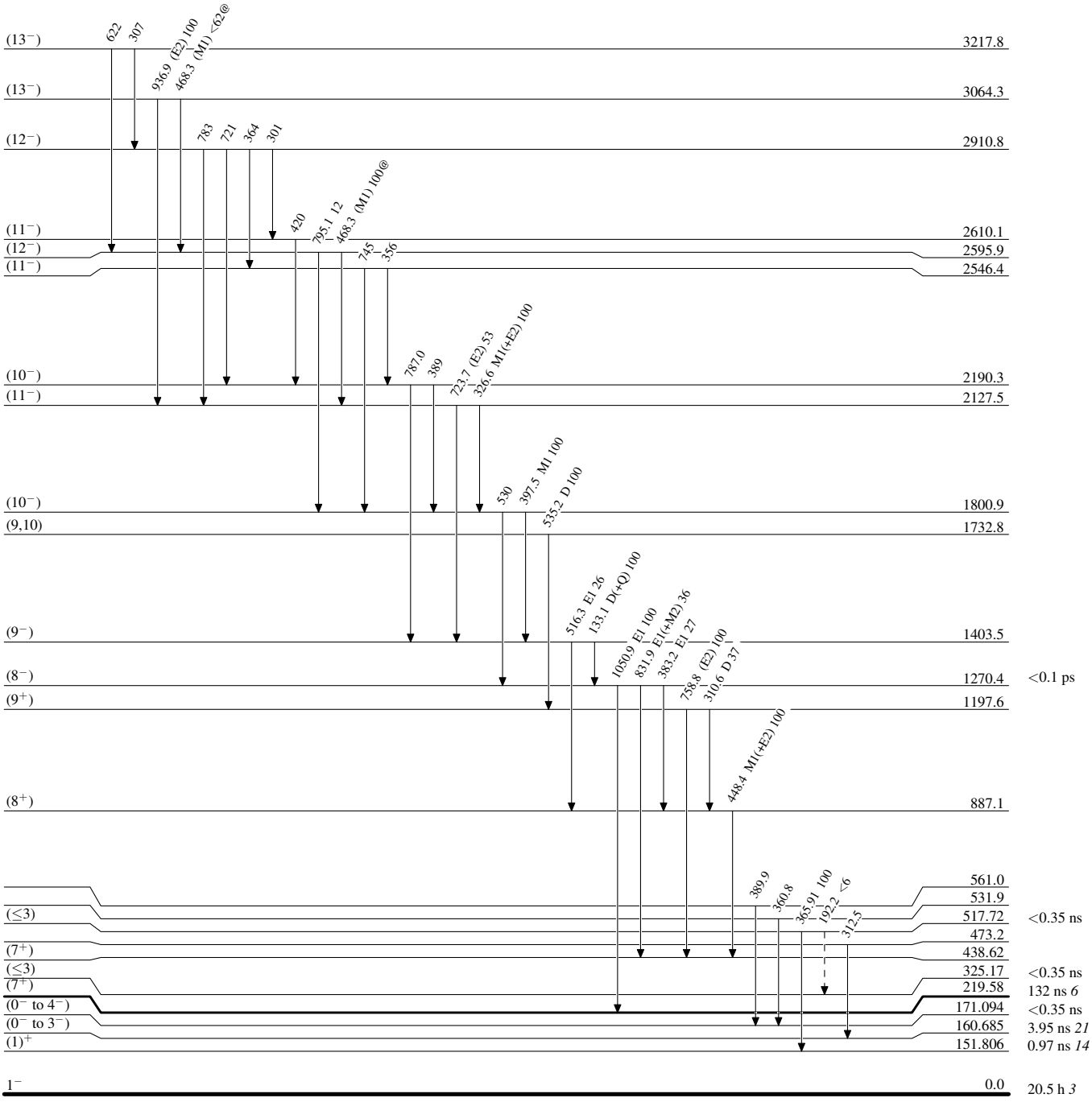
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

- - - - - - ► γ Decay (Uncertain)



$^{100}_{45}Rh_{55}$

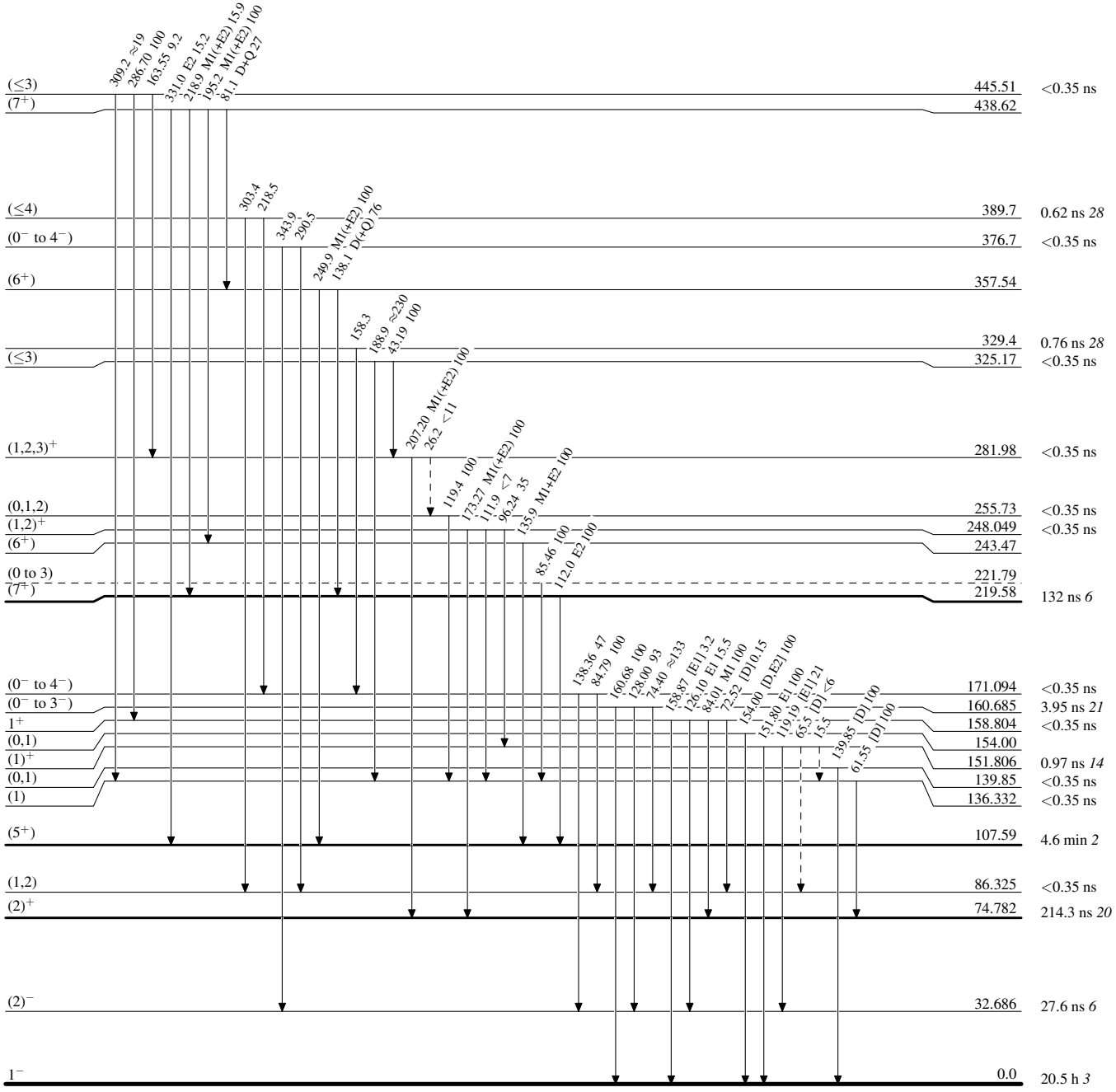
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



$^{100}_{45}Rh_{55}$

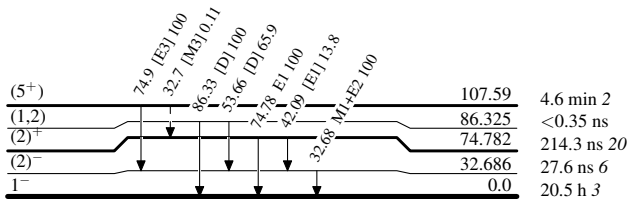
Adopted Levels, Gammas

Legend

Level Scheme (continued)

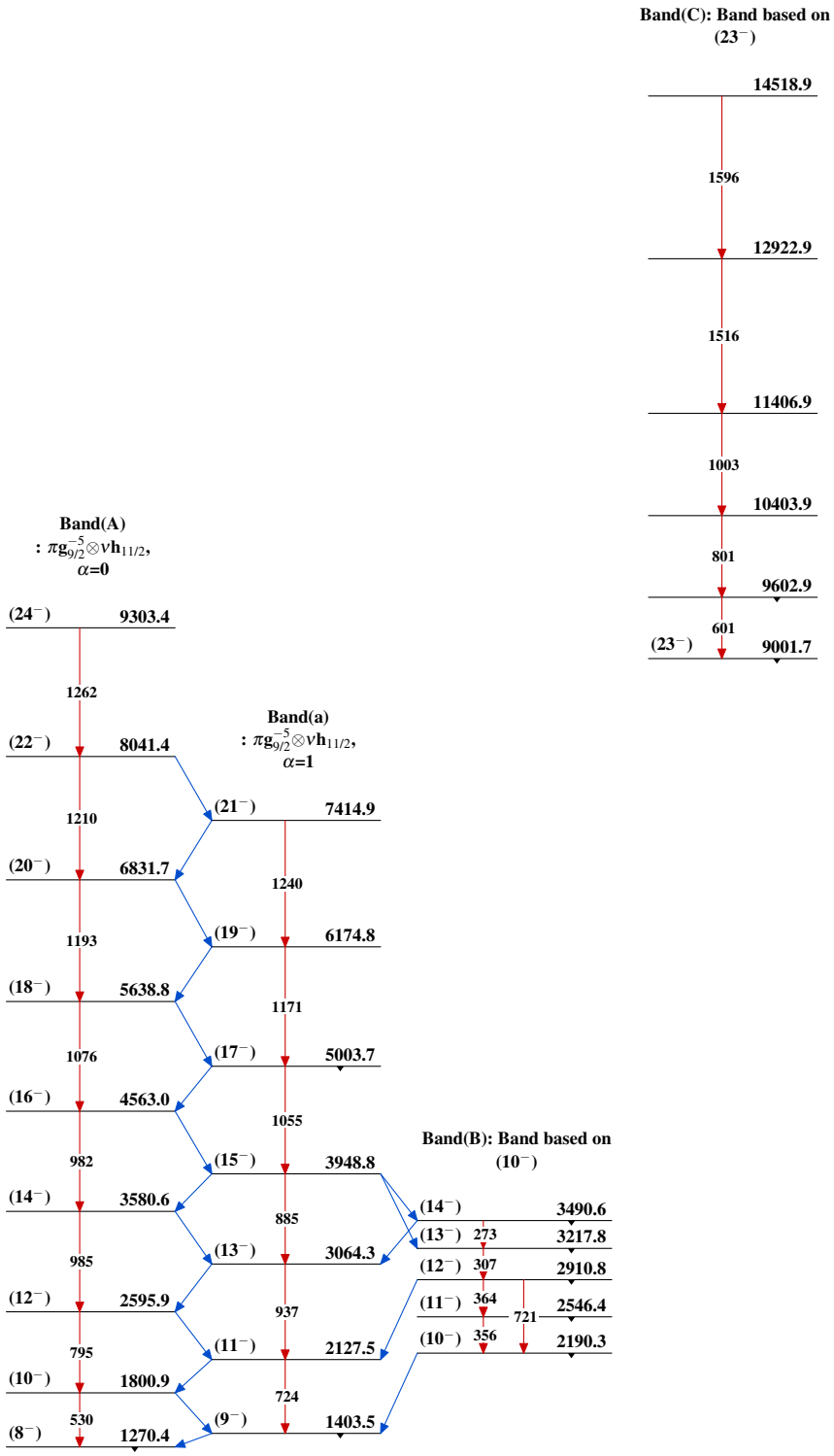
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



$^{100}_{45}Rh_{55}$

Adopted Levels, Gammas



$^{100}_{45}Rh_{55}$