Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113,2187 (2012)	15-Sep-2012

Q(β^-)=−7.9×10^3 *syst*; S(n)=1.23×10^4 *syst*; S(p)=2049 *5*; Q(α)=−3.74×10^3 *15* 2012Wa38
Note: Current evaluation has used the following Q record −7.9E3 syst 12.28E3SY 2049 *5* −3745 *6* 2011AuZZ.
Q(β^-),S(n),S(p),Q(α) from 2011AuZZ; −7860 *640*, 12330 *570*, 1990 *710*, −3080 *450*, respectively, from systematics (2003Au03).
Q(εp)=5699 *5* (2011AuZZ).
Uncertainty in Q(β^-), S(n) is 500, 400 respectively (2011AuZZ).
Production: Ni(^{106}Cd,x), E(^{106}Cd)=60 MeV/nucleon (1994He28,1995Mo26,1995He39); fragment mass separator with 150 ns flight path. ^{112}Sn (E=112 GeV) on Be (2000WeZZ).

^{92}Rh Levels

Cross Reference (XREF) Flags

- A ^{58}Ni(^{40}Ca,αpnγ)
- B ^{40}Ca(^{58}Ni,αpnγ)
- C ^{94}Ag 2p decay

E(level)†	J$^\pi$‡	$T_{1/2}$	XREF	Comments
0.0#&	(≥6$^+$)#	4.66 s *25*	ABC	%ε+%β^+=100 J$^\pi$: ε decay to ^{92}Ru(6$^+$) is probably allowed and feeding of ^{92}Ru(8$^+$) is evident; existence of a low-lying J=5 state is not supported by shell-model calculations or Rh g.s. J^π systematics. However, see comment on J(0+x) level which may, in reality, Be the g.s. $T_{1/2}$: from time behavior of 163γ, 340γ, 818γ and 919γ in ^{92}Ru following ^{92}Rh ε decay (2004De40). Others: 3.0 s *8* (2001Xu05, 2005Xu04; from 893γ(^{91}Tc)(t) following εp decay); 5.6 s *5* (2001Ki13); 5.6 s *3* (2002Ku21; from time-to digital converter spectrum gated by 817γ, 865γ and 990γ); 2.9 s *+15−8*, preliminary datum from 2000WeZZ for level(s) produced in ^{112}Sn bombardment of Be.
0.0+x	(2$^+$)	0.53 s *37*		%ε+%β^+=100 J$^\pi$: possible ε decay branches observed to 0$^+$ and 2$^+$ levels in ^{92}Ru; shell-model calculations predict a very low energy 2$^+$ level which may in fact be the g.s., but no 1$^+$ state. However, the decay scheme is very tentative and the branch to ^{92}Ru(0$^+$ g.s.) may be overestimated. $T_{1/2}$: from two-component fit to time spectrum of 866γ(^{92}Ru) following ε decay from a ^{92}Rh source containing both ^{92}Rh isomers (2004De40).
235& *1*	(8$^+$)		ABC	
599.1& *13*	(9$^+$)		ABC	
1270.9& *13*	(10$^+$)		ABC	
1548.6& *14*	(11$^+$)		ABC	
1845.9? *17*			A	
2151.7@ *15*	(11$^-$)		AB	
2536.6& *17*	(13$^+$)		AB	
2607.7@ *17*	(12$^-$)		AB	
2843.7@ *17*	(13$^-$)		AB	
3196.6& *20*	(15$^+$)		AB	
3779.7@ *20*	(15$^-$)		AB	E(level): the order of the 1034γ-936γ cascade is not established, so E=3878, J^π=(14$^-$) is a possible alternative.
4313.6& *23*	(17$^+$)		AB	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{92}Rh Levels (continued)

E(level)[†]	J$^\pi$[‡]	XREF	Comments
4813.7[@] *22*	(16$^-$)	AB	
5418.6[&] *25*	(19$^+$)	AB	
5752.7[@] *25*	(18$^-$)	AB	
6029[&] *3*	(20$^+$)	AB	
6305[&] *3*	(21$^+$)	AB	
6385[@] *3*	(19$^-$)	AB	E(level): the order of the 1420γ-632γ cascade is not established, so E=7173, J^π=(20$^-$) is a possible alternative.
6691[@] *3*	(20$^-$)	B	E(level): the order of the 1114γ-306γ cascade is not established, so E=7499 is also possible. Alternatively, E=6059 or 6867 and J^π=(20$^-$) if order of 1419γ and 632γ is reversed.
7805[@] *3*	(21$^-$)	AB	
9744[@] *3*	(23$^-$)	B	

[†] From least-squares fit to Eγ, allowing 1 keV uncertainty in all Eγ data.
[‡] Tentative values suggested in (^{40}Ca,αpnγ), based on measured transition anisotropy ratios and comparison of E(level) with energies predicted by shell-model calculations in the ($p_{1/2}$, $g_{9/2}$) model space (1997Ka07), except as noted.
[#] Shell-model calculations predict a 6$^+$ level ≈200 keV below an 8$^+$ level (unlike ^{90}Nb, ^{92}Tc, and isotones ^{88}Nb, ^{90}Tc, where the 6$^+$ is 100-200 keV above the 8$^+$ and, for ^{90}Nb, isomeric). The strongest transition (237γ) observed in (^{40}Ca,αpnγ) is preceded by a 1036γ whose energy is comparable to 890 and 1141 for the yrast 10$^+$ to 8$^+$ transitions in ^{90}Tc and ^{92}Tc, respectively. Shell-model calculations also predict 2$^+$ and 4$^+$ states ≈50 keV below and above the 6$^+$ level, respectively; consequently, the observed 6$^+$ level might not in fact be the g.s., but in the absence of experimental evidence to the contrary, the evaluator assigns it as the g.s. here and associates the longer of the measured ^{92}Rh halflives with it.
[@] Band(A): π=−, yrast sequence.
[&] Band(B): π=+, yrast sequence. Agreement with shell model predictions (1997Ka07) is very good.

γ(^{92}Rh)

E$_i$(level)	J$_i^\pi$	E$_\gamma$[†]	I$_\gamma$	E$_f$	J$_f^\pi$	Mult.[‡]	δ[#]	Comments
235	(8$^+$)	235	100	0.0	(≥6$^+$)			
599.1	(9$^+$)	364	100	235	(8$^+$)	D+Q	−0.05 *3*	
1270.9	(10$^+$)	672	40.9[@] *21*	599.1	(9$^+$)	D+Q	−0.20 *6*	
		1036	100[@] *16*	235	(8$^+$)	Q[#]		
1548.6	(11$^+$)	278	79[@] *8*	1270.9	(10$^+$)	D(+Q)[#]	+0.01 *5*	
		949	100[@] *6*	599.1	(9$^+$)	Q		
1845.9?		575[&]	100	1270.9	(10$^+$)			Reported in (^{40}Ca,αpnγ) only.
2151.7	(11$^-$)	307[&]		1845.9?				Reported in (^{40}Ca,αpnγ) only.
		603	53[@] *5*	1548.6	(11$^+$)			
		881	100[@] *10*	1270.9	(10$^+$)	D(+Q)[#]	−0.02 *4*	
2536.6	(13$^+$)	988	100	1548.6	(11$^+$)	Q		
2607.7	(12$^-$)	456	100	2151.7	(11$^-$)	D(+Q)[#]	−0.05 *5*	
2843.7	(13$^-$)	236	90[@] *4*	2607.7	(12$^-$)	D+Q[#]	−0.07 *3*	
		692	100[@] *7*	2151.7	(11$^-$)	Q		
3196.6	(15$^+$)	660	100	2536.6	(13$^+$)	Q		
3779.7	(15$^-$)	936	100	2843.7	(13$^-$)	Q		
4313.6	(17$^+$)	1117	100	3196.6	(15$^+$)	Q		
4813.7	(16$^-$)	1034	100	3779.7	(15$^-$)	D+Q	+0.27 *5*	
5418.6	(19$^+$)	1105	100	4313.6	(17$^+$)	Q		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{92}Rh) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
5752.7	(18$^-$)	939	100	4813.7	(16$^-$)	Q[#]		
6029	(20$^+$)	610	100	5418.6	(19$^+$)	D+Q[#]	−0.05 *3*	
6305	(21$^+$)	276	100	6029	(20$^+$)	D(+Q)[#]	−0.04 *6*	
6385	(19$^-$)	632	100	5752.7	(18$^-$)	D+Q[#]	+0.25 *4*	E_γ: from ^{40}Ca(^{58}Ni,αpnγ).
6691	(20$^-$)	306	100	6385	(19$^-$)	D+Q[#]	+0.11 *5*	E_γ: from ^{40}Ca(^{58}Ni,αpnγ).
7805	(21$^-$)	1114	66.7[@] *17*	6691	(20$^-$)	D+Q[#]	−0.14 *9*	E_γ: from ^{40}Ca(^{58}Ni,αpnγ).
		1420	100[@] *8*	6385	(19$^-$)	Q		E_γ: from ^{40}Ca(^{58}Ni,αpnγ).
9744	(23$^-$)	1939	100	7805	(21$^-$)	Q[#]		

† From (^{40}Ca,αpnγ), except as noted; uncertainty unstated by authors. Agreement with data from (^{58}Ni,αpnγ) is excellent.
‡ Based on γ anisotropy ratio in (^{40}Ca,αpnγ), except as noted.
# From γ asymmetry in ^{40}Ca(^{58}Ni,αpnγ).
@ From ^{40}Ca(^{58}Ni,αpnγ).
& Placement of transition in the level scheme is uncertain.

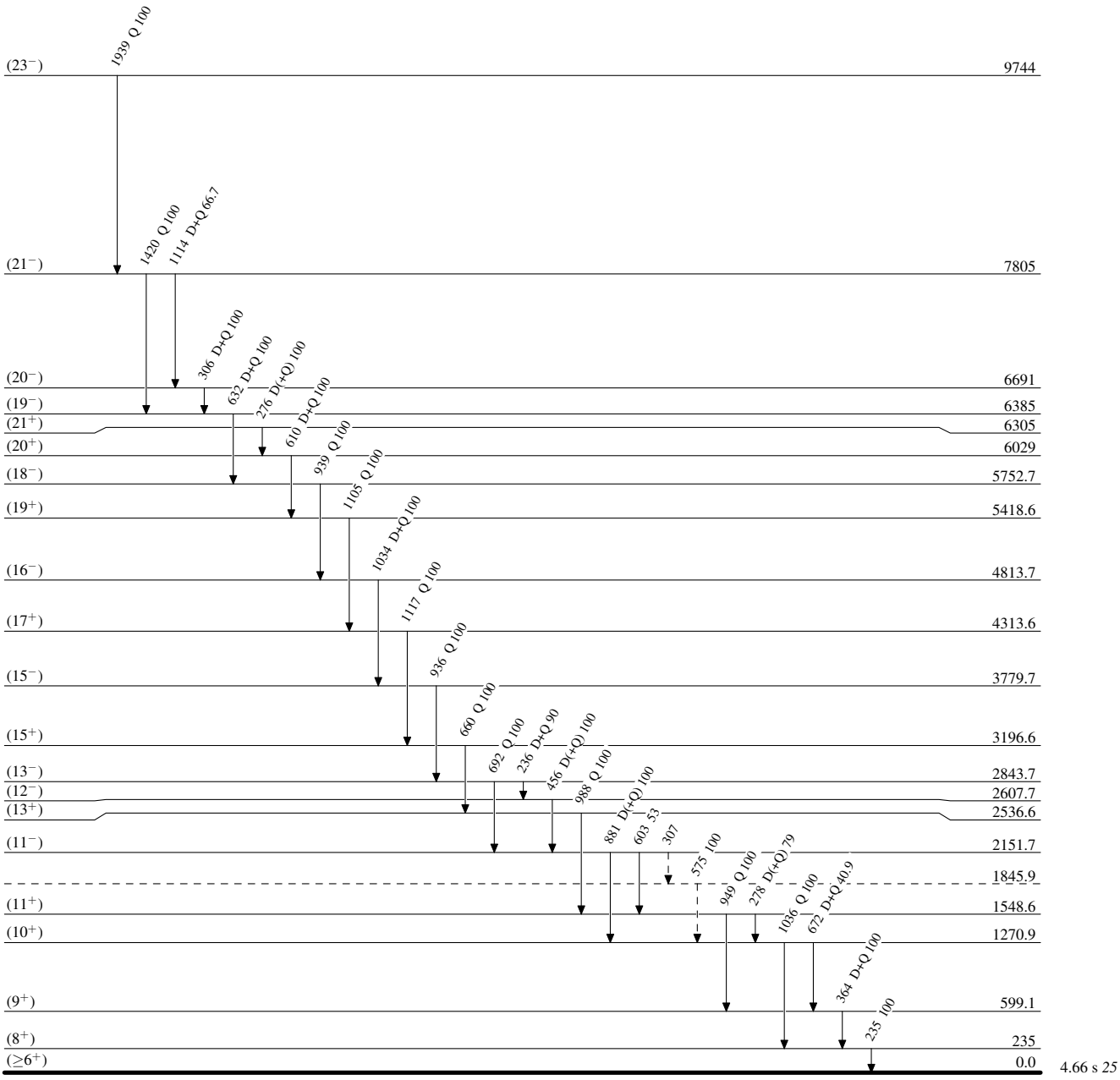
Adopted Levels, Gammas

Legend

Level Scheme

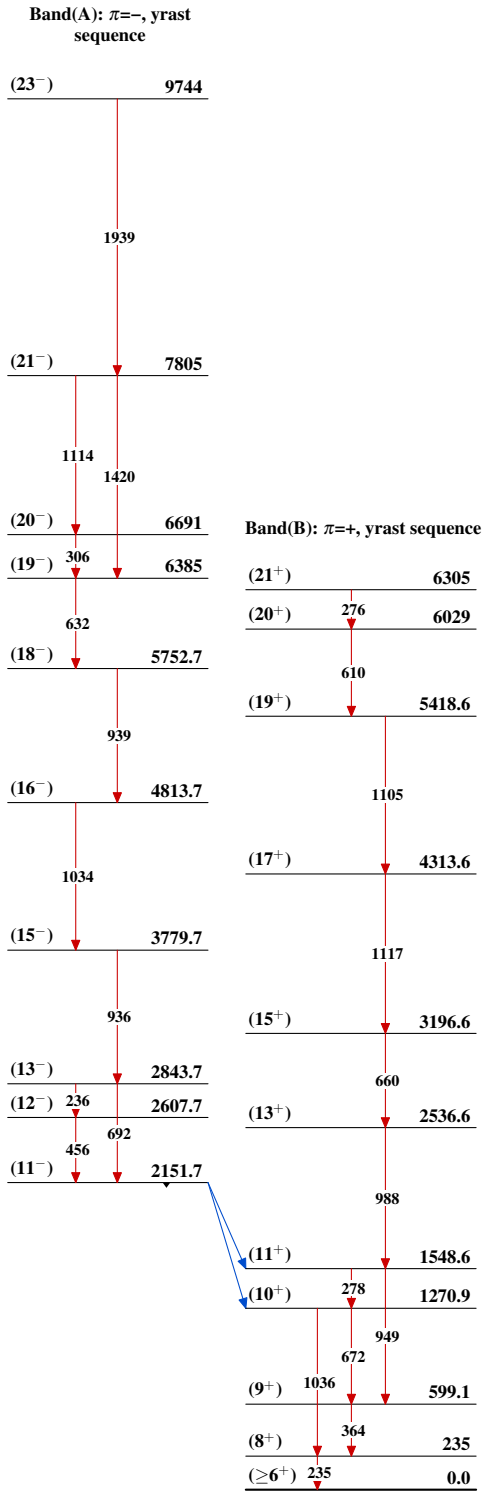
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{92}_{45}Rh_{47}$

Adopted Levels, Gammas



$^{92}_{45}Rh_{47}$