^{81}**Br(α,nγ)**   **1991Do04**

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	F. G. Kondev	NDS 110,2815 (2009)	30-Sep-2009

E(α)=13,16,19, and 27 MeV; measured: γ, $\gamma\gamma$, γ(t), $\gamma(\theta)$, and excitation functions; Ge detectors; additional measurements were carried out using the ^{82}Se(^{6}Li,4nγ) and ^{80}Se(^{7}Li,3nγ) reactions, where singles γ rays were measured to confirm assignments of γ's to ^{84}Rb.

^{84}Rb Levels

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	Comments
0.0	2$^-$		
248.1 _4_	3$^-$		
463.7 _4_	6$^-$		Configuration=((π p$_{3/2}$)(ν g$_{9/2}$)) is proposed in 1991Do04.
467.1 _5_	(5$^-$)	9 ns _2_	T$_{1/2}$: from γ(t), but the gating transitions were not provided by the authors. configuration: 1991Do04 state that the assigned Configuration=((π p$_{1/2}$)(ν g$_{9/2}$)) to this state explains the high M1 strength of the 3.4γ. However, see evaluator's note on the authors' B(M1)(W.u.) value.
472.8 _5_	4$^{(-)}$		
544.3[#] _5_	5$^{(+)}$	11 ns _1_	T$_{1/2}$: from 80.6γ(t). Configuration=((π g$_{9/2}$)(ν g$_{9/2}$)) from comparison with π=+ sequence in several neighboring odd-odd Br nuclides.
573.5[#] _7_	6$^{(+)}$		
602.6 _7_	(4,6)		
614.1 _6_	(5)$^-$		
620.1[#] _8_	7$^{(+)}$		
678.3 _7_	(7$^-$)		Configuration=((π f$_{5/2}$)(ν g$_{9/2}$)) is proposed in 1991Do04.
703.9[#] _8_	8$^{(+)}$		
1157.7 _8_			
1334.9[#] _9_	(9$^+$)		
1759.4[#] _9_	(10$^+$)		

[†] From the least squared fit to Eγ.
[‡] From 1991Do04, based on $\gamma(\theta)$ and excitation functions.
[#] Band(A): ΔJ=1 cascade feeding 5$^{(+)}$ level at 544.3-keV.

γ(^{84}Rb)

E$_\gamma$[‡]	I$_\gamma$	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.[#]	α[†]	Comments
(3.4)	0.12 _4_	467.1	(5$^-$)	463.7	6$^-$	[M1]	361	α(L)=304 _5_; α(M)=50.5 _7_; α(N+..)=5.86 _9_ α(N)=5.63 _8_; α(O)=0.231 _4_ I$_\gamma$: From α and I(γ+ce)=100−Ti(219γ). The B(M1)(W.u.)=0.4 _1_ given by 1991Do04 is in error, as it is based on $\alpha\approx$62 from the tables of Rosel et al (1978Ro22), which do not include the L1 contribution to α. If one takes α=361 from BrIcc for the 3.4-keV M1 transition, the result is much lower, e.g. B(M1)(W.u.)$\approx$0.08.
29.2 _5_		573.5	6$^{(+)}$	544.3	5$^{(+)}$	(M1)	4.9 _3_	α(K)=4.33 _24_; α(L)=0.50 _3_; α(M)=0.083 _5_; α(N+..)=0.0097 _6_ α(N)=0.0093 _5_; α(O)=0.000387 _21_ Mult.: A$_2$<0.
46.6 _5_		620.1	7$^{(+)}$	573.5	6$^{(+)}$	(M1)	1.26 _5_	α(K)=1.11 _4_; α(L)=0.127 _5_; α(M)=0.0210 _8_;

Continued on next page (footnotes at end of table)

^{81}**Br**(α,nγ)   **1991Do04** (continued)

$\gamma(^{84}$Rb) (continued)

E_γ[‡]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
								α(N+..)=0.00246 *9*
								α(N)=0.00236 *9*; α(O)=9.9×10^{-5} *4*
								Mult.: A$_2$<0.
71.4 *5*		544.3	5$^{(+)}$	472.8	4$^{(-)}$			
77.2 *5*		544.3	5$^{(+)}$	467.1	(5$^-$)			Mult.: A$_2$>0.
80.6 *5*		544.3	5$^{(+)}$	463.7	6$^-$			
83.8 *5*		703.9	8$^{(+)}$	620.1	7$^{(+)}$	(M1)	0.236 *6*	α(K)=0.208 *5*; α(L)=0.0237 *6*; α(M)=0.00392 *9*;
								α(N+..)=0.000460 *11*
								α(N)=0.000442 *10*; α(O)=1.86×10^{-5} *4*
								Mult.: A$_2$<0.
110 *1*		573.5	6$^{(+)}$	463.7	6$^-$			
135.5 *5*		602.6	(4,6)	467.1	(5$^-$)			
139.0[@] *5*		602.6	(4,6)	463.7	6$^-$			
141.3 *5*		614.1	(5)$^-$	472.8	4$^{(-)}$			
146.9 *5*		614.1	(5)$^-$	467.1	(5$^-$)			
150.4[@] *5*		614.1	(5)$^-$	463.7	6$^-$			
214.6 *5*		678.3	(7$^-$)	463.7	6$^-$	(M1)	0.0189	α(K)=0.0167 *3*; α(L)=0.00185 *3*; α(M)=0.000305 *5*; α(N+..)=3.60×10^{-5} *6*
								α(N)=3.46×10^{-5} *6*; α(O)=1.482×10^{-6} *23*
								Mult.: A$_2$=−0.17 *2*.
215.5 *5*		463.7	6$^-$	248.1	3$^-$			
219.0 *5*	52 *17*	467.1	(5$^-$)	248.1	3$^-$	E2	0.0550 *9*	α(K)=0.0480 *8*; α(L)=0.00590 *10*; α(M)=0.000972 *16*; α(N+..)=0.0001097 *18*
								α(N)=0.0001058 *18*; α(O)=3.90×10^{-6} *7*
								I_γ: From α and I(γ+ce)=55 *18*, derived from authors′ B(E2)(W.u.).
								Mult.: A$_2$>0.
								B(E2)(W.u.)=3.0 *7* (1991Do04).
224.7 *5*		472.8	4$^{(-)}$	248.1	3$^-$			
248.1 *5*		248.1	3$^-$	0.0	2$^-$			
424.6 *5*		1759.4	(10$^+$)	1334.9	(9$^+$)			
453.8 *5*		1157.7		703.9	8$^{(+)}$			
463.7 *5*		463.7	6$^-$	0.0	2$^-$			
584.2 *5*		1157.7		573.5	6$^{(+)}$			
631.0 *5*		1334.9	(9$^+$)	703.9	8$^{(+)}$			
1055.4 *5*		1759.4	(10$^+$)	703.9	8$^{(+)}$			

[†] Additional information 1.
[‡] From 1991Do04, but uncertainties were estimated by the evaluator.
[#] From $\gamma(\theta)$ in 1991Do04, but A$_2$ values were not provided by the authors.
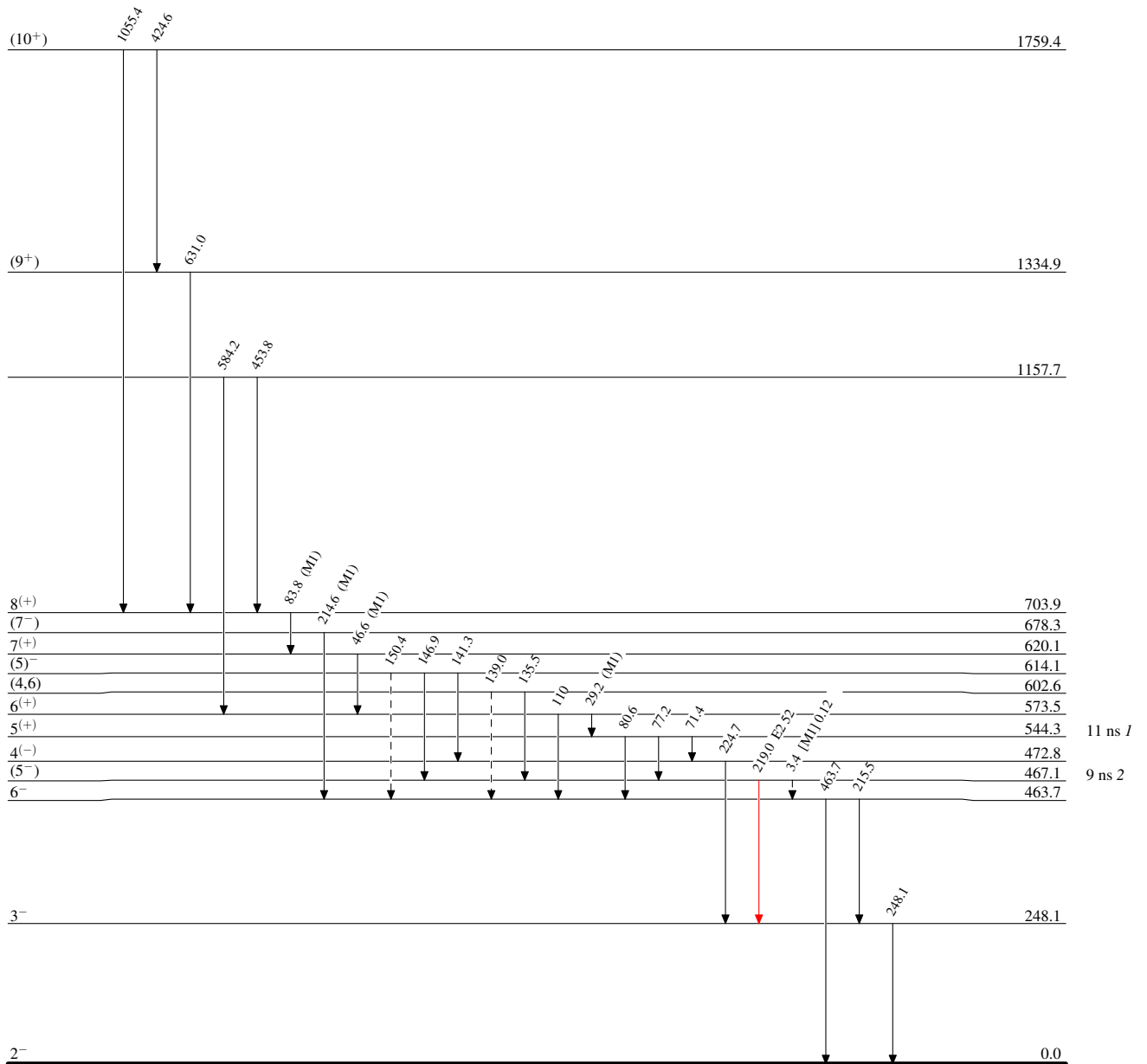[@] Placement of transition in the level scheme is uncertain.

^{81}**Br(α,nγ)**   **1991Do04**
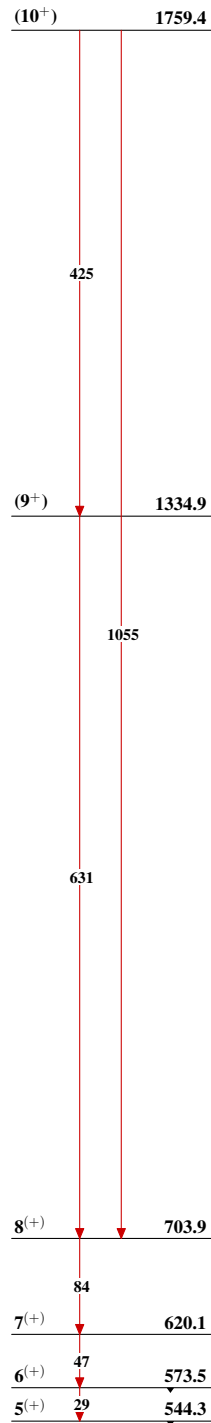
<u>Level Scheme</u>

Intensities: Relative I$_\gamma$

Legend

→ I$_\gamma$ < 2%×I$_\gamma^{max}$
→ I$_\gamma$ < 10%×I$_\gamma^{max}$
→ I$_\gamma$ > 10%×I$_\gamma^{max}$
--→ γ Decay (Uncertain)

(10$^+$)   1759.4

(9$^+$)   1334.9

                                                                                            1157.7

8$^{(+)}$ 703.9
(7$^-$)   678.3
7$^{(+)}$ 620.1
(5)$^-$ 614.1
(4,6)   602.6
6$^{(+)}$ 573.5
5$^{(+)}$ 544.3   11 ns I
4$^{(-)}$ 472.8
(5$^-$)   467.1   9 ns 2
6$^-$ 463.7

3$^-$ 248.1

2$^-$ 0.0

$^{84}_{37}$Rb$_{47}$

^{81}Br$(\alpha,n\gamma)$ **1991Do04**

Band(A): ΔJ=1 cascade
feeding 5$^{(+)}$ level at
544.3-keV

(10$^+$)   1759.4

425

(9$^+$)   1334.9

1055

631

8$^{(+)}$ 703.9

84

7$^{(+)}$ 620.1

47

6$^{(+)}$ 573.5

5$^{(+)}$ 29   544.3

$^{84}_{37}$Rb$_{47}$