Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh	NDS 110,1917 (2009)	30-Jun-2009

Q(β^-)=727 *4*; S(n)=8289 *5*; S(p)=6142 *4*; Q(α)=−5017 *4* 2012Wa38
Note: Current evaluation has used the following Q record 727 4 *8289* 5 *6142* 4 −5017 4 2009AuZZ,2003Au03.
S(2n)=19306 *10*, s(2p)=15741 *4* (2009AuZZ,2003Au03).
Additional information 1.

^{78}Br Levels

Cross Reference (XREF) Flags

A	^{78}Br IT decay (119.4 μs)	F	^{77}Se(α,2npγ),^{76}Ge(^{7}Li,5nγ)
B	^{70}Zn(^{11}B,3nγ)	G	^{78}Se(p,n)
C	^{75}As(α,nγ)	H	^{78}Se(p,nγ)
D	^{76}Se(α,npγ),^{78}Se(p,nγ),	I	^{79}Br(p,d)
E	^{77}Se(^{3}He,d)		

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	XREF	Comments
0.0	1$^+$	6.45 min *4*	ABCDEFGHI	%ε+%β^+≥99.99 (1973Hi01); %β^-≤0.01 (1973Hi01) μ=0.13 *3* (1992Pr06) J$^\pi$: spin from atomic−beam method (1980Ek02); parity from L(p,d)=1+3 and L(^{3}He,d)=1. $T_{1/2}$: weighted average of 6.46 min *4* (1973Hi01), 6.4 min *3* (1973ArZI), 6.4 min *4* (1962Va27), 6.47 min *10* (1961Sc11), 6.5 min *1* (1961Ri02), 6.25 min *20* (1960Pi06), 6.5 min *5* (1951Ho42), 6.3 min *2* (1938Bu04), 6.4 min *1* (1937Sn02). μ: static nuclear orientation with measurement of γ rays (1992Pr06). See also 2005St24 compilation.
32.32 *8*	(2$^-$)	11.3 ns *30*	ABCD FGHI	μ=−1.12 *4* (1973Pl07,1989Ra17) μ: TDPAD method (1973Pl07). See also 2005St24 compilation. $T_{1/2}$: unweighted average of 8.3 ns *9* from γ(t) in (α,nγ) (1979Kl05) and 14.2 ns *3* from pulsed-beam method in ^{78}Ge IT decay (1972Ch34). J$^\pi$: sign of g-factor suggests π=−. The ratio Iγ(148γ)/Iγ(32γ) suggests (E1,M1) for 32γ and (E2,M2) for 148γ. $\gamma(\theta)$ of 32γ rules out J=0 for 32γ. Thus J^π=(1$^-$,2$^-$) for 32 level and J^π=(1$^-$, 2$^-$, 3$^-$, 4) for 181 level. Long $T_{1/2}$ of 181 level suggests M2 rather than E2. γ to 32 level and no γ decay to g.s. from 181 level supports J^π=(4$^+$) for 181 level. Similarly J^π=(2$^-$) for 32 level, assuming 32γ is E1. L(p,d)=1 gives positive parity.
55.11 *10*	(1,2)$^+$	7.5 ns *11*	C GHI	J$^\pi$: L(p,d)=1+3; 3$^+$ not allowed by RUL for γ to 1$^+$.
125.14 *11*	(1,2)$^+$		C E GHI	J$^\pi$: L(p,d)=L(^{3}He,d)=1.
180.89 *13*	(4$^+$)	119.4 μs *10*	ABCD F H	%IT=100 μ=+4.114 *12* (1974FoYO,1989Ra17) μ: g=+1.028 *3* (1974FoYO,NMR). Others: g=+1.02 *2* (1972Ch34, differential−perturbed angular distribution method); g=+1.025 *3* (1971Br31,NMR). See also 2005St24 compilation. J$^\pi$: see comments for 32 level. $T_{1/2}$: from γ(t). Weighted average of 120 μs *1* (1982Be03), 119.2 μs *10* (1970De46), 111 μs *10* (1969Ru10), 123 μs *25* (1968Io01), 124 μs *25* (1967Iv03,1967Iv04), 118.0 μs *15* (1961Sc11), 127 μs *5* (1958Du80). Others: 80 μs *2* (1971In04) is discrepant, 127 μs (1965Mc03).
193.40 *16*	(0 to 3)$^{(+)}$		C e GH	J$^\pi$: L(^{3}He,d)=3+1 for 193 and/or 197; γ to 1$^+$.
197.24 *14*	(1,2,3)$^{(+)}$	4.7 ns *5*	C e Hi	J$^\pi$: L(^{3}He,d)=3+1 for 193 and/or 197; γ to (2$^-$).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{78}Br Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
204.40 *10*	(0 to 3)$^{(+)}$	5.9 ns *6*	C Hi	Jπ: L(p,d)=1 for 204 and/or 197.
227.67 *18*	(5$^+$)	84 ns *8*	B D F	Jπ: probable M1+E2 γ to (4$^+$). $T_{1/2}$: from γ(t) in ^{77}Se(α,2npγ),^{75}Ge(^{7}Li,5nγ) (1982Be03).
242.82 *17*	(2,3)$^-$	17 ns *2*	C Fg I	Jπ: L(p,d)=2+4; γ to 1$^+$. $T_{1/2}$: from γ(t) in ^{77}Se(α,2npγ),^{75}Ge(^{7}Li,5nγ) (1982Be03). Other: γ(t) measurement in 1979Kl05 gives 13.8 ns *11* from the unresolved γ-ray doublet at 46.3 keV.
244.62 *15*	(2,3)$^+$		C E gH	XREF: E(249). Jπ: L(^{3}He,d)=3.
263.36 *15*	(3,4)$^-$		C gHI	Jπ: L(p,d)=4.
265.03 *18*	(5$^-$)	5.1 ns *5*	CD Fg	XREF: C(?). Jπ: ΔJ=1 γ to (4$^+$); γ to (5$^+$); systematics of odd-odd Br nuclei.
284.3? *5*			H	
292.2? *5*			H	
311.94 *12*			C GH	
329.52 *13*	(1,2)$^+$		C E GHI	XREF: E(322)G(322). Jπ: L(^{3}He,d)=1; L(p,d)=1+3.
337.85 *20*	(6$^+$)	7.3 ns *12*	BCD F	XREF: C(?). Jπ: ΔJ=1 γ's to (5$^-$) and (5$^+$). $T_{1/2}$: from γ(t). Weighted average of 6.5 ns *7* (1979Kl05) and 9.0 ns *10* (1982Be03).
367.4 *3*	(1 to 4)$^-$		GHI	XREF: G(361). Jπ: L(p,d)=2. E(level): from (p,nγ).
389 *4*	(3,4)$^-$		g I	Jπ: L(p,d)=2+4.
390.9 *3*	(2,3)$^+$		C E gH	XREF: E(383). Jπ: L(^{3}He,d)=(3); γ to 1$^+$ and (2$^-$).
414.8 *5*			GH	E(level): from (p,nγ).
423.4[a] *4*	(6$^-$)	<25 ns	BCD F	XREF: C(?)F(?). Jπ: ΔJ=(1) γ's to (5$^+$). $T_{1/2}$: from 196γ(t) in ^{77}Se(α,2npγ),^{75}Ge(^{7}Li,5nγ) (1982Be03), assuming 196.0γ seen in that work mainly deexcites the 423 level.
433.5 *4*	(1,2)$^+$		C E GHI	XREF: G(427)I(430). Jπ: L(p,d)=L(^{3}He,d)=1.
437.74 *22*	(7$^+$)	<3 ns	BCD F	XREF: C(?). Jπ: ΔJ=1 γ to (6$^+$). $T_{1/2}$: from γ(t) in ^{77}Se(α,2npγ),^{75}Ge(^{7}Li,5nγ) (1982Be03).
447.05 *23*	(0$^+$ to 3$^+$)		C GH	Jπ: γ's to 1$^+$ and (2,3)$^+$.
457.22 *18*	(0 to 3$^+$)		C F	XREF: C(?). Jπ: γ to 1$^+$.
467.81[@] *24*	(8$^+$)		BCD F	XREF: C(?). Jπ: ΔJ=(1) γ to (7$^+$).
473.9? *3*			CD	XREF: C(?).
476.93 *15*	(3$^-$,4$^-$)		C GHI	XREF: G(465)H(479). Jπ: L(p,d)=(4); weak γ to 1$^+$.
498.5 *5*	(1,2)$^+$		C E GHI	XREF: C(?)E(506)G(491)I(495). Jπ: L(^{3}He,d)=(1); L(p,d)=1.
508? *10*			G	
526.7 *6*			GH	E(level): from (p,nγ).
551 *4*	(0 to 3)$^+$		G I	XREF: G(545). Jπ: L(p,d)=1.
579.43 *25*	(2,3)$^+$		C E G I	XREF: E(573)I(579). E(level): 573 in (^{3}He,d) and 579 in (p,d) are assumed (by evaluators) to correspond to the same level.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{78}Br Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
			Jπ: L(p,d)=1; L(^{3}He,d)=3.
601.2? 3		CD	XREF: C(?).
643 4	(0 to 3)$^+$	I	Jπ: L(p,d)=1.
647.59 22	(4)	C F	XREF: C(?). Jπ: γ's to (5$^+$) and (3,4)$^-$.
663 4	(0 to 3)$^+$&(2 to 6)$^-$	I	E(level),Jπ: doublet with L(p,d)=4+1.
684.9[b] 4	(7$^-$)	BCD	XREF: C(?). Jπ: γ's to (5$^-$), (5$^+$), (6$^-$) and (6$^+$).
717 4	(1,2,3)$^+$	I	Jπ: L(p,d)=1+3.
793.3 3	(1,2)$^+$	C E I	Jπ: L(^{3}He,d)=1; L(p,d)=1(+3).
828.3 7	(8$^-$)	BCD	XREF: C(?). Jπ: γ to (6$^-$).
854 4	(1,2,3)$^+$	I	Jπ: L(p,d)=1+3.
868 4	(1,2,3)$^+$	I	Jπ: L(p,d)=1(+3).
891 4	(1,2,3)$^+$	I	Jπ: L(p,d)=1+3.
912.0 4	(1,2)$^+$	C E I	Jπ: L(^{3}He,d)=L(p,d)=1.
930 4	(1,2,3)$^+$	I	Jπ: L(p,d)=1+3.
977.1[&] 3	(9$^+$)	B D F	Jπ: γ to (8$^+$).
989 4	(0 to 3)$^+$	I	Jπ: L(p,d)=1.
1001.0 4	(1,2,3)$^+$	C I	XREF: I(1005). Jπ: L(p,d)=1(+3).
1026 4	(0 to 3)$^+$	I	Jπ: L(p,d)=1.
1030.2[a] 4	(8$^-$)	BCD	XREF: C(?). Jπ: γ's to (6$^-$), (7$^-$) and (7$^+$).
1039 4	(0 to 3)$^+$	I	Jπ: L(p,d)=1.
1060 4	(1$^+$,2$^+$)	E I	Jπ: L(^{3}He,d)=(1); L(p,d)=1(+3).
1130 4	(1,2,3)$^{(+)}$	I	Jπ: L(p,d)=(1+3).
1173 4	(2,3)$^+$	E I	Jπ: L(^{3}He,d)=3; L(p,d)=(1).
1188 4	(1,2,3)$^{(+)}$	I	Jπ: L(p,d)=(1+3).
1200 4	(0 to 3)$^{(+)}$	I	Jπ: L(p,d)=(1).
1243 4	(0 to 3)$^+$	I	Jπ: L(p,d)=1.
1261 4	(2,3)$^+$	E I	XREF: E(1254). E(level): 1254 in (^{3}He,d) and 1261 in (p,d) are assumed (by evaluators) to correspond to the same level. Jπ: L(p,d)=1; L(^{3}He,d)=3.
1371.8[@] 3	(10$^+$)	BCD F	XREF: C(?). Jπ: ΔJ=(2) γ to (8$^+$); γ to (9$^+$).
1395	(2,3)$^+$	E	Jπ: L(^{3}He,d)=3.
1463.1[b] 5	(9$^-$)	BCD	XREF: C(?). Jπ: γ's to (7$^-$) and (8$^-$).
1486	(0,1)$^+$	E	Jπ: L(^{3}He,d)=1; not populated in (p,d). The neutron is assumed to be at $2p_{1/2}$ orbital.
1570	(≤3)$^+$	E	Jπ: L(^{3}He,d)=3+1.
1691	(2,3)$^+$	E	Jπ: L(^{3}He,d)=3.
1746	(0 to 3)$^+$	E	Jπ: L(^{3}He,d)=3+1.
1823	(2$^+$,3$^+$)	E	Jπ: L(^{3}He,d)=(3).
1905.0[a] 7	(10$^-$)	B	Jπ: γ to (8$^-$).
1940.5[&] 4	(11$^+$)	BCD F	XREF: C(?). Jπ: ΔJ=1 γ to (10$^+$); γ to (9$^+$).
1985		E	
2062	(2$^+$,3$^+$)	E	Jπ: L(^{3}He,d)=(3).
2162	(2$^+$,3$^+$)	E	Jπ: L(^{3}He,d)=(3).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{78}Br Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
2455.5[b] *7*	(11−)	B	Jπ: γ to (9−).
2585.3[@] *5*	(12+)	B D	Jπ: ΔJ=(2) γ to (10+).
3016.5[a] *8*	(12−)	B	Jπ: γ to (10−).
3148.8[&] *6*	(13+)	B	Jπ: ΔJ=(1) γ to (12+); ΔJ=(2) γ to (11+).
3619.9[b] *9*	(13−)	B	Jπ: γ to (11−).
4049.3[@] *10*	(14+)	B	Jπ: γ to (12+).
4296.5[a] *10*	(14−)	B	Jπ: γ to (12−).
4541.8[&] *10*	(15+)	B	Jπ: γ to (13+).
4921.9[b] *10*	(15−)	B	Jπ: γ to (13−).
5604.3[@] *10*	(16+)	B	Jπ: γ to (14+).
6086.9[&] *10*	(17+)	B	Jπ: γ to (15+).

† From least-squares fit to Eγ′s, assuming Δ(Eγ)=0.5 keV when not given. For levels populated in transfer reactions only, the values are from weighted averages of available data. Estimated uncertainty in level energies from (^{3}He,d) only is ≈10 keV.

‡ Assignments for low-spin (J≤4) are mainly from ^{79}Br(p,d) and ^{77}Se(^{3}He,d) particle transfer reactions. The target nuclei ^{79}Br and ^{77}Se have g.s. spins 3/2− and 1/2−, respectively. The unpaired proton in ^{79}Br is expected to be in $2p_{3/2}$ orbital and unpaired neutron in ^{77}Se in the $2p_{1/2}$ orbital. In (p,d), the low-lying levels in ^{78}Br are expected to be from neutron holes in $2p_{1/2}$, $1f_{5/2}$, $2p_{3/2}$, $1g_{9/2}$ and $2d_{5/2}$ orbitals. In (^{3}He,d), the low-lying states in ^{78}Br are expected to be from protons in $2p_{3/2}$, $1f_{5/2}$ and $2p_{1/2}$ orbitals. The levels populated in both reactions. The assignments for high-spin (J>4) levels are mainly from band structures in ^{70}Zn(^{11}B,3nγ) reaction and γγ(θ) data for only selected transitions; ascending spins are assumed with the increase in excitation energy.

\# From γ(t) in (α,nγ) (1979Kl05) unless otherwise stated. Uncertainty of 10% is added in quadrature to the quoted uncertainties by 1979Kl05, see comment in (α,nγ) dataset.

@ Band(A): Band based on (8+), α=0.

& Band(a): Band based on (9+), α=1.

a Band(B): Band based on (6−), α=0.

b Band(b): Band based on (7−), α=1.

γ(^{78}Br)

E_i(level)	$J^π_i$	Eγ[†]	Iγ[†]	E_f	$J^π_f$	Mult.[#]	α[@]	Comments
32.32	(2−)	32.3 *1*	100	0.0	1+	[E1]	2.29	α(K)=2.02 *4*; α(L)=0.232 *4*; α(M)=0.0362 *6*; α(N+..)=0.00312 *6* α(N)=0.00312 *6* B(E1)(W.u.)=0.00030 *8* Eγ: from ^{78}Br IT decay (119.2 μs).
55.11	(1,2)+	55.1 *1*	100	0.0	1+	[M1]	0.609	α(K)=0.538 *8*; α(L)=0.0605 *9*; α(M)=0.00963 *15*; α(N+..)=0.000890 *14* α(N)=0.000890 *14* B(M1)(W.u.)=0.0109 *16*
125.14	(1,2)+	125.0 *2*	100	0.0	1+			
180.89	(4+)	148.55 *10*	100	32.32	(2−)	[M2]	0.295	α(K)=0.257 *4*; α(L)=0.0325 *5*; α(M)=0.00523 *8*; α(N+..)=0.000477 *7* α(N)=0.000477 *7* B(M2)(W.u.)=0.1519 *18*
193.40	(0 to 3)(+)	193.59 *20*	100	0.0	1+			
197.24	(1,2,3)(+)	71.99 *20*	100 *6*	125.14	(1,2)+			
		141.8 *5*	9 *6*	55.11	(1,2)+			
		164.6 *5*	36 *6*	32.32	(2−)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{78}Br)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	α[@]	Comments
197.24	$(1,2,3)^{(+)}$	197.0[a]		0.0	1^+			
204.40	(0 to 3)$^{(+)}$	79.2 *2*	6 *1*	125.14	$(1,2)^+$			
		204.41[&] *10*	100 *8*	0.0	1^+			
227.67	(5^+)	46.8 *2*	100	180.89	(4^+)	(M1+E2)	8 *7*	α(K)=6 *5*; α(L)=1.4 *13*; α(M)=0.22 *21*; α(N+..)=0.017 *16* α(N)=0.017 *16*
242.82	$(2,3)^-$	46.3 *5*	≈200	197.24	$(1,2,3)^{(+)}$	[E1]		E_γ: 46.3γ and 46.8γ (from 227.67 level) form an unresolved doublet.
		242.85 *2*	100 *10*	0.0	1^+			
244.62	$(2,3)^+$	212.45 *20*	100 *9*	32.32	(2^-)			
		244.7 *5*	89 *27*	0.0	1^+			
263.36	$(3,4)^-$	231.07 *20*	100 *9*	32.32	(2^-)			
		263.34 *20*	74 *9*	0.0	1^+			
265.03	(5^-)	37.41 *10*	100 *8*	227.67	(5^+)			
		84.05 *20*	48 *4*	180.89	(4^+)	D		
284.3?		284.3[‡a] *5*	100	0.0	1^+			
292.2?		292.2[‡a] *5*	100	0.0	1^+			
311.94		114.3[‡] *5*		197.24	$(1,2,3)^{(+)}$			
		118.74[&] *20*		193.40	(0 to 3)$^{(+)}$			
		186.5[&] *5*	51	125.14	$(1,2)^+$			
		279.62[&] *10*		32.32	(2^-)			
		311.6 *5*	100 *16*	0.0	1^+			
329.52	$(1,2)^+$	204.41[&] *10*	100	125.14	$(1,2)^+$			
		329.41 *20*	13 *4*	0.0	1^+			
337.85	(6^+)	72.88 *20*	3.2 *2*	265.03	(5^-)	D		
		110.16 *10*	100 *7*	227.67	(5^+)	D		
367.4	(1 to 4)$^-$	75.0[‡a] *5*		292.2?				
		102.8[‡] *5*	38	265.03	(5^-)			
		161.91[a] *10*		204.40	(0 to 3)$^{(+)}$			
		334.9[‡] *5*	100	32.32	(2^-)			
		367.2[‡] *5*	40	0.0	1^+			
390.9	$(2,3)^+$	61.0[‡a] *5*		329.52	$(1,2)^+$			
		98.0[‡a] *5*		292.2?				
		186.5[&] *5*	71	204.40	(0 to 3)$^{(+)}$			
		358.2[‡] *5*	33	32.32	(2^-)			
		391.3 *5*	100 *48*	0.0	1^+			
414.8		414.8[&‡] *5*	100	0.0	1^+			
423.4	(6^-)	158.5[a]		265.03	(5^-)			
		195.8	100	227.67	(5^+)	(D)		E_γ: this γ most likely corresponds to 196.0 *3* in ^{77}Se(α,2npγ), ^{75}Ge(^{7}Li,5nγ) (1982Be03), where it is placed as a g.s. transition.
433.5	$(1,2)^+$	103.46[a] *20*		329.52	$(1,2)^+$			
		239.2[‡a] *5*		193.40	(0 to 3)$^{(+)}$			
		308.1 *5*	100 *29*	125.14	$(1,2)^+$			
		433.7 *5*	99 *59*	0.0	1^+			
437.74	(7^+)	99.89 *10*	100	337.85	(6^+)	D		
447.05	$(0^+$ to $3^+)$	80.0[‡a] *5*		367.4	(1 to 4)$^-$			
		202.41 *20*	100 *15*	244.62	$(2,3)^+$			
		414.3[a] *5*	32 *31*	32.32	(2^-)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{78}Br) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]
447.05	(0+ to 3+)	447.2[‡] *5*		0.0	1+	
457.22	(0 to 3+)	261.30 *20*	100 *12*	197.24	(1,2,3)(+)	
		457.2 *2*	44 *12*	0.0	1+	
467.81	(8+)	30.07 *10*	100	437.74	(7+)	(D)
473.9?		208.84[a] *20*	100	265.03	(5−)	
476.93	(3−,4−)	195.0[‡a] *5*		284.3?		
		232.36 *10*	100 *7*	244.62	(2,3)+	
		274.4[‡a] *5*		204.40	(0 to 3)(+)	
		279.62[&] *10*	49 *5*	197.24	(1,2,3)(+)	
		477.4 *5*	6 *4*	0.0	1+	
498.5	(1,2)+	215.0[‡a] *5*		284.3?		
		302.6[‡] *5*		197.24	(1,2,3)(+)	
		497.9 *14*	100 *19*	0.0	1+	
526.7		159.3[‡] *5*	100	367.4	(1 to 4)−	
579.43	(2,3)+	102.5 *2*	100	476.93	(3−,4−)	
601.2?		336.15[a] *20*	100	265.03	(5−)	
647.59	(4)	404.9 *2*	100 *15*	242.82	(2,3)−	
		419.6 *3*	60 *10*	227.67	(5+)	
684.9	(7−)	210.73[a] *20*		473.9?		
		261.5	73 *14*	423.4	(6−)	
		347.0	50 *9*	337.85	(6+)	
		419.6[a] *3*		265.03	(5−)	
		457.3	100 *18*	227.67	(5+)	
793.3	(1,2)+	213.88 *10*	100	579.43	(2,3)+	
828.3	(8−)	404.9	100	423.4	(6−)	
912.0	(1,2)+	118.74[&] *20*	100	793.3	(1,2)+	
977.1	(9+)	509.2 *2*	100	467.81	(8+)	
1001.0	(1,2,3)+	207.69 *20*	100	793.3	(1,2)+	
1030.2	(8−)	345.3	18 *3*	684.9	(7−)	
		592.3	13 *3*	437.74	(7+)	
		606.8	100 *8*	423.4	(6−)	
1371.8	(10+)	394.5 *3*	19 *3*	977.1	(9+)	
		904.1 *2*	100 *15*	467.81	(8+)	(Q)
1463.1	(9−)	432.9	45 *7*	1030.2	(8−)	
		778.2	100 *17*	684.9	(7−)	
1905.0	(10−)	874.8	100	1030.2	(8−)	
1940.5	(11+)	568.5 *3*	100 *14*	1371.8	(10+)	D
		963.6	11.6 *23*	977.1	(9+)	
2455.5	(11−)	992.4	100	1463.1	(9−)	
2585.3	(12+)	1213.5	100	1371.8	(10+)	(Q)
3016.5	(12−)	1111.5	100	1905.0	(10−)	
3148.8	(13+)	563.6	100 *16*	2585.3	(12+)	(D)
		1208.3	95 *16*	1940.5	(11+)	(Q)
3619.9	(13−)	1164.4	100	2455.5	(11−)	
4049.3	(14+)	1464	100	2585.3	(12+)	
4296.5	(14−)	1280	100	3016.5	(12−)	
4541.8	(15+)	1393	100	3148.8	(13+)	
4921.9	(15−)	1302	100	3619.9	(13−)	
5604.3	(16+)	1555	100	4049.3	(14+)	
6086.9	(17+)	1545	100	4541.8	(15+)	

[†] The values given here represent averages of available data mainly from (^{11}B,3nγ); (α,nγ); (α,2npγ),(^{7}Li,5nγ); and (p,nγ)

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{78}Br)$ (continued)

experiments.

‡ From (p,nγ) only.

From $\gamma(\theta)$ data in a,2npg),(^{7}Li,5nγ) and $\gamma\gamma(\theta)$(DCO) in (^{11}B,3nγ), unless otherwise stated.

@ 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.

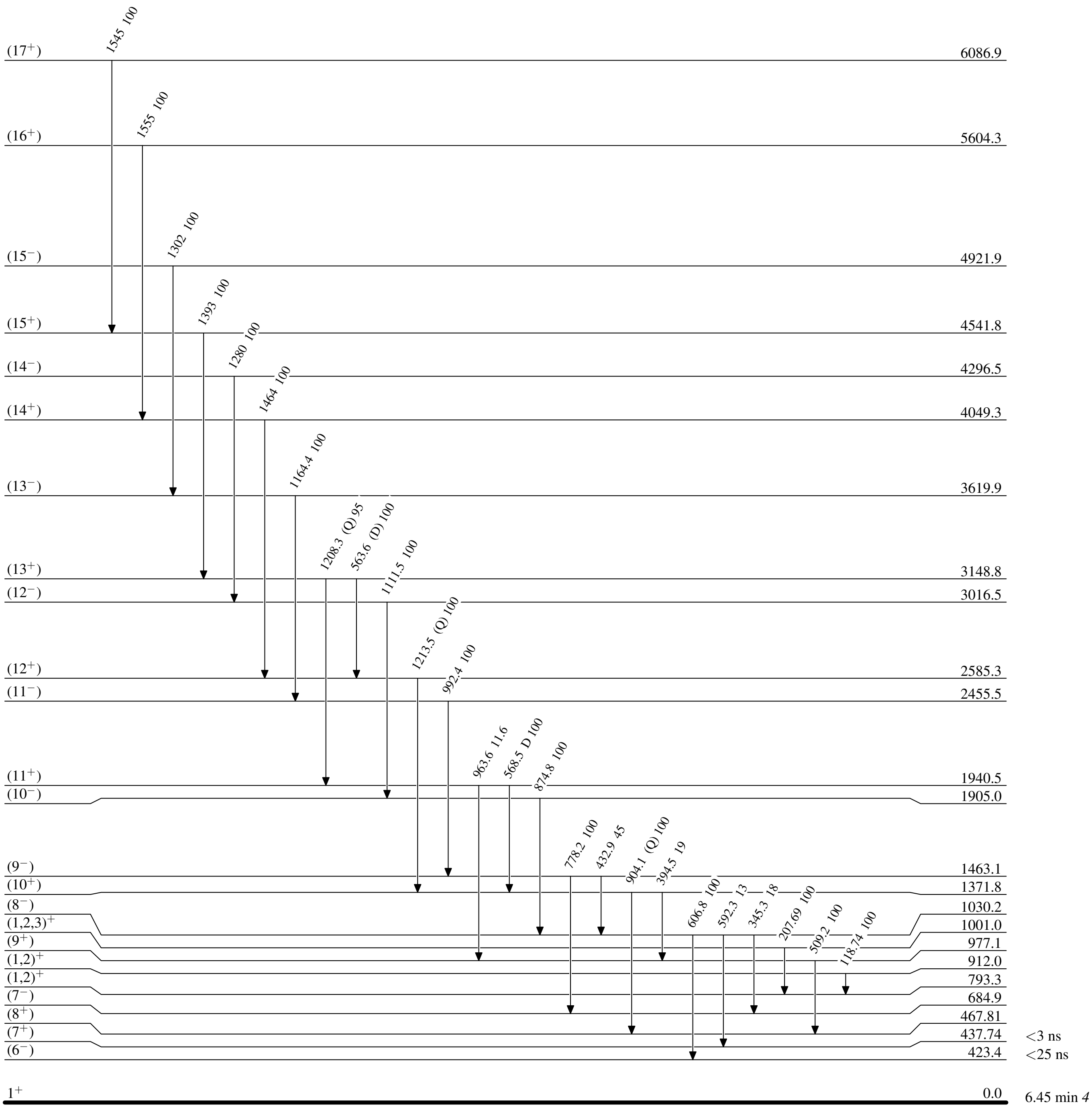
& Multiply placed.

[a] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{78}_{35}Br_{43}$

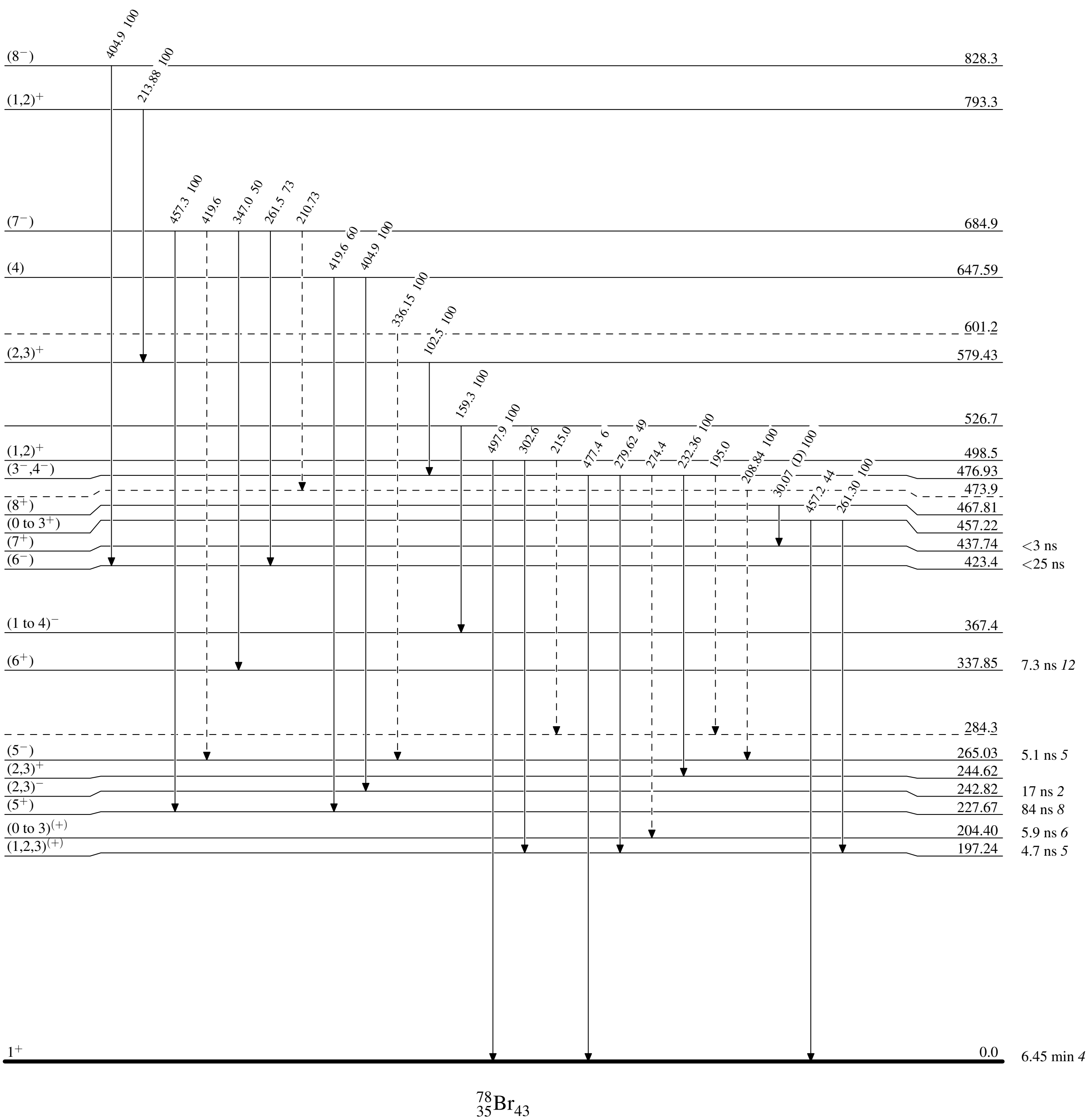
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

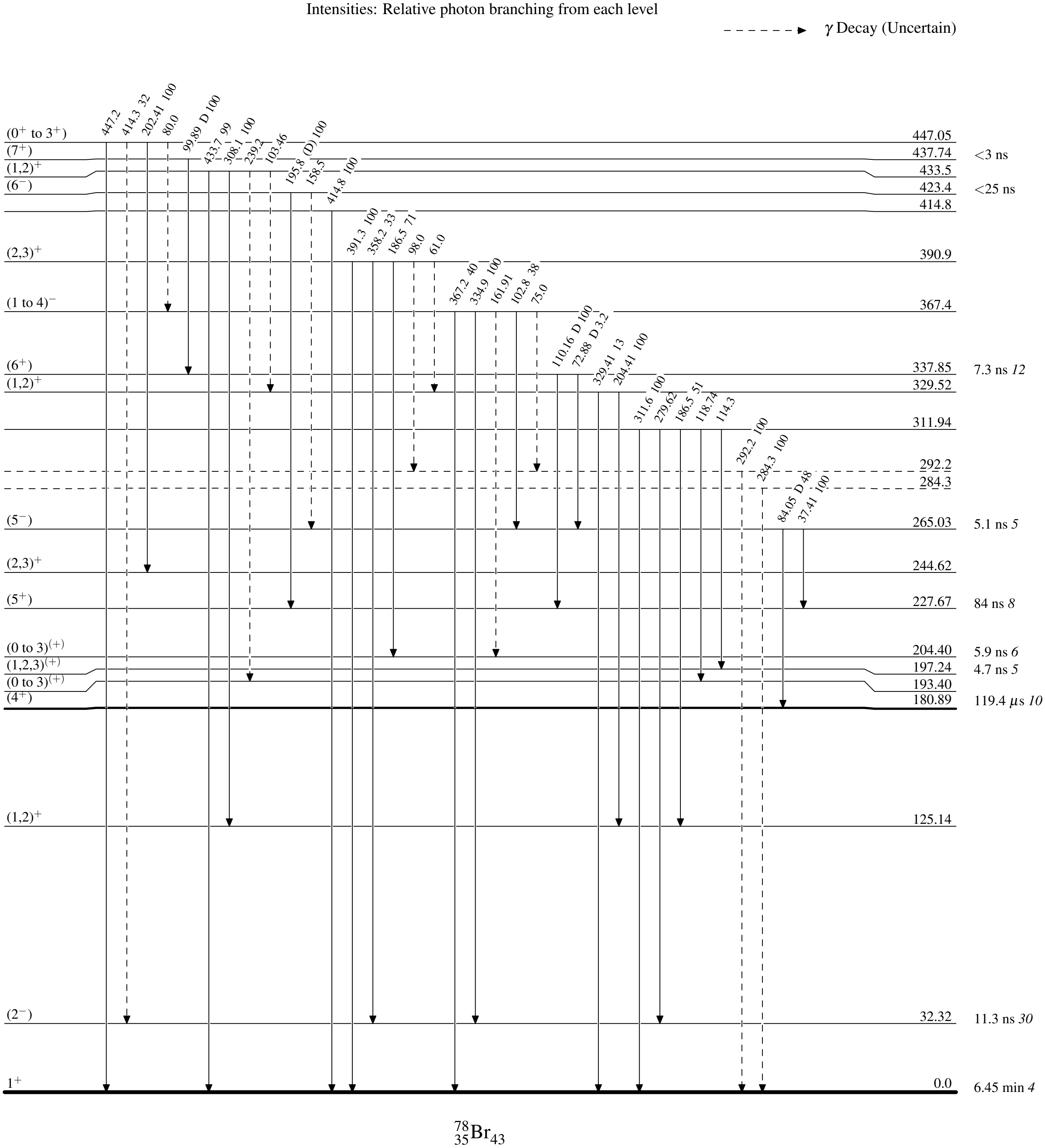
- - - - - ► γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



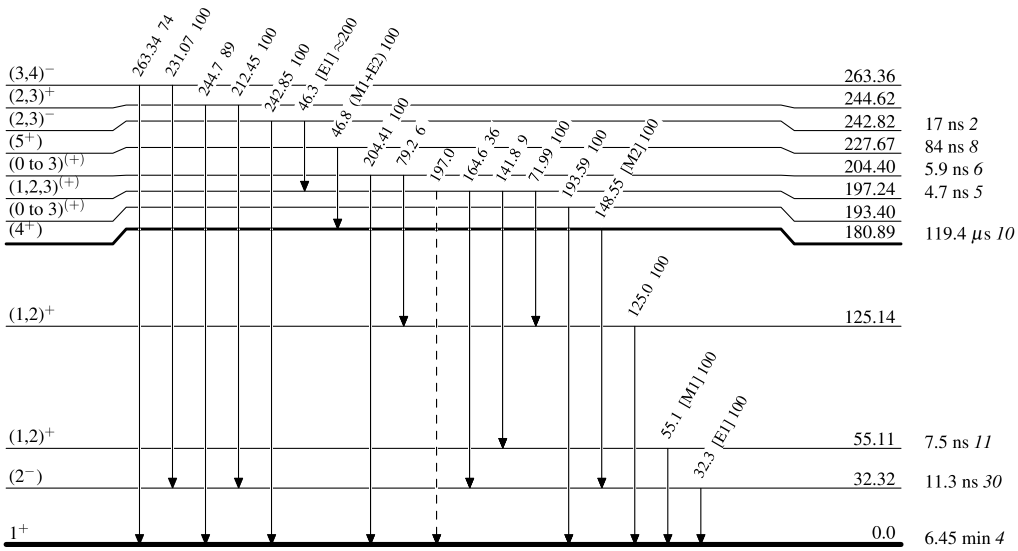
Adopted Levels, Gammas

Legend

Level Scheme (continued)

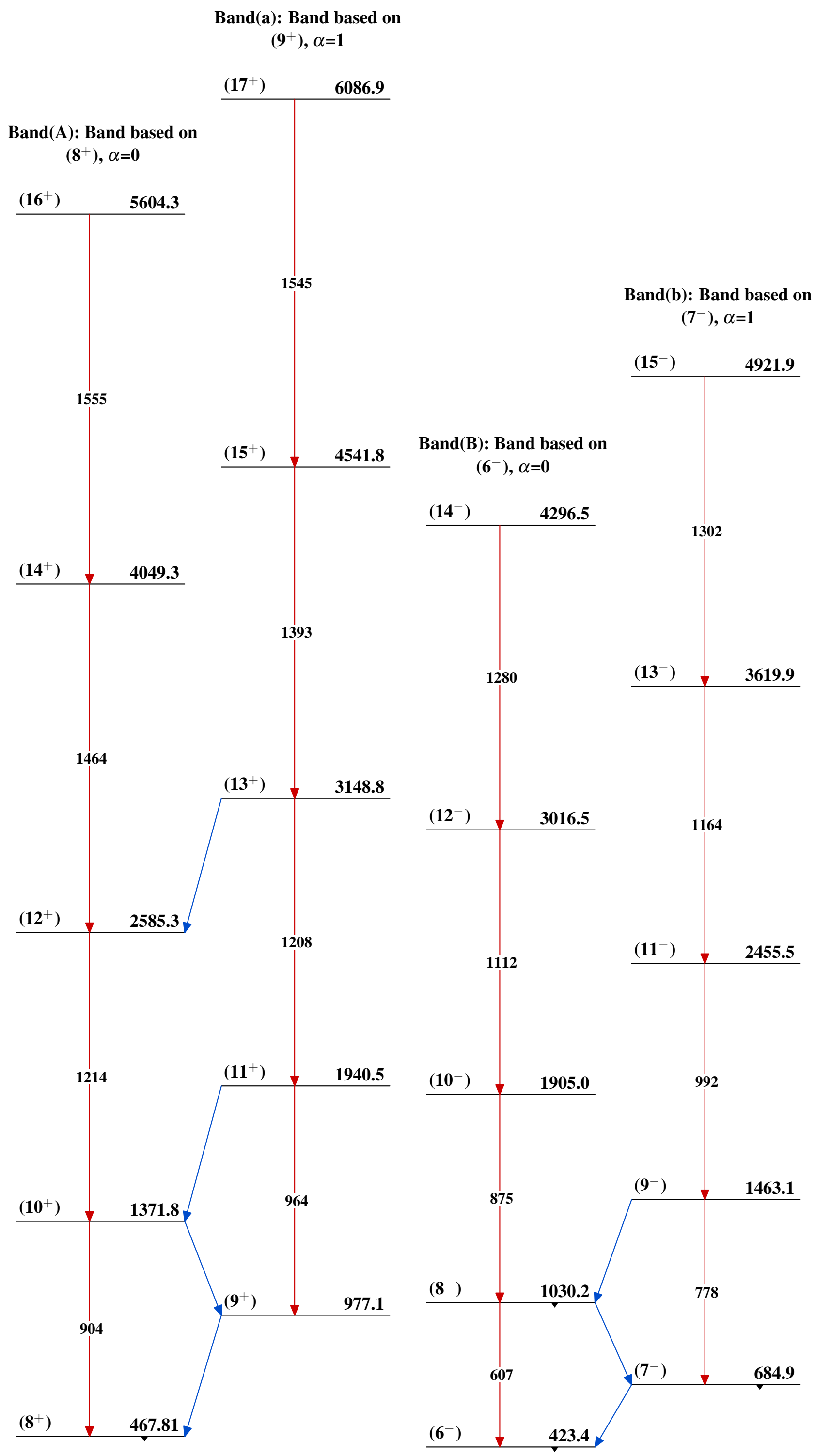
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{78}_{35}Br_{43}$

Adopted Levels, Gammas



$^{78}_{35}Br_{43}$