Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 133, 221 (2016)	1-Dec-2015

Q(β^-)=−875×10^1 *5*; S(n)=1019×10^1 *5*; S(p)=3075 *19*; Q(α)=6309.6 *14* 2012Wa38

Identification: ^{209}Bi(p,xn) E=60-150 MeV (1967Le21) excit., chem.; ^{187}Re(^{19}F,xn) (1967Si09) excit., cross bombardment; ^{232}Th(p,spallation), genetics with mass-separated ^{202}Rn (1971Ho01).

^{198}Po Levels

Cross Reference (XREF) Flags

A	(HI,xnγ)	D	^{165}Ho(^{40}Ar,6Particle normalization)
B	(HI,xnγ):SD	E	U(p,X):radius
C	^{202}Rn α decay (9.7 s)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[@]	0$^+$	1.760 min *24*	A CDE	%α=57 *2*; %ε+%β^+=43 *2* %α,%ε+%β^+: From %α=57 *2* (1993Wa04). Other: 70 *8* deduced from I(α)/[I(α)+I(ε)] (1971Ho01), 63 *2* (systematics, 1981Sc01). T$_{1/2}$: From α decay (9.7 s). Weighted average of 1.70 min *5* (1967Le21), 1.80 min *5* (1967Si09), 1.78 min *5* (1971Ho01,1984Da14), 1.8 min *1* (1982Bo04), and 1.75 min *5* (1993Wa04). δ<r^2>(^{198}Po,^{210}Po)=−0.619 fm^2 *12*(stat) *13*(syst) (2011Co01). $\delta\nu$(^{198}Po,^{210}Po)=+7.57 GHz *17* (2011Co01).
604.94[@] *10*	2$^+$		A C	
816.0 *7*	0$^+$	<0.4 ns	C	T$_{1/2}$: From $\alpha\gamma$(t) in ^{202}Rn α decay (9.7 s) (1992Wa29). J$^\pi$: From E0 to 0$^+$ in ^{202}Rn α decay (9.7 s).
1039.13[&] *14*	2$^+$		A	
1158.39[@] *13*	4$^+$		A	
1483.35[&] *16*	4$^+$		A	
1717.56[@] *16*	6$^+$		A	
1808.41 *15*	5$^-$		A	
1853.63 *18*	8$^+$	29 ns *2*	A	μ=+7.3 *2* (1986Ma31,2011StZZ). μ: From TDPAD.
1874.96 *18*	(6$^+$)		A	
2114.33 *17*	7$^-$		A	
2287.60 *24*	8$^-$		A	
2324.73 *18*	9$^-$		A	
2344.6 *3*	(8$^+$)		A	
2565.92 *20*	11$^-$	200 ns *20*	A	μ=+12.1 *6* (1986Ma31,2011StZZ). μ: From TDPAD.
2620.50 *21*	(8$^+$)		A	
2641.33 *22*	9$^-$		A	
2691.86 *20*	10$^+$		A	
2813.1 *3*	10$^-$		A	
2900.43 *20*	11$^-$		A	
2963.8 *4*			A	
3010.2 *4*	(10$^+$)		A	
3174.5 *3*	(11$^-$)		A	
3308.6 *4*	12$^-$		A	
3465.3 *3*	13$^-$		A	
3646.1 *3*	(13$^-$)		A	
3801.9 *4*			A	

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Adopted Levels, Gammas (continued)

^{198}Po Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
3868.4 *4*	14⁻		A	
4052.2 *5*			A	
4086.4 *4*	(15⁻)		A	
4322.1 *5*	(16⁻)		A	
4521.0 *4*			A	
4596.0 *5*			A	
2691.86+x *20*	12⁺	0.75 μs *5*	A	Additional information 1. $T_{1/2}$: Others: ≈750 ns (1994La35), 0.69 μs *+76−35* (2003Gl05), 0.60 μs *16* (2004Gl04). μ=−1.86 *4* (1986Ma31,2011StZZ). μ: From TDPAD. E(level): x is unknown energy of 12⁺ to 10⁺ transition.
3149.81+x? *18*			A	
3241.36+x *10*	14⁺		A	
3444.4+x *3*			A	
3579.24+x *20*			A	
3782.95+x *14*	16⁺		A	
3984.76+x *23*			A	
4010.62+x *18*	16⁺		A	
4391.80+x *23*	17		A	
4407.65+x *25*	18⁺		A	
4662.1+x *3*			A	
5113.2+x *4*			A	
y[a]	J		B	Additional information 2. E(level): y ≈4.8 MeV from estimated SD excitation energy of 6.2 MeV *5* at spin of 21 and 3.9 MeV at spin of 0 (2005Jo03); SD well depth is estimated (2005Jo03) to be ≈3.3 MeV *5* at spin of 11. Jπ: J≈6, suggested by 1996Mc01 from a fitting of spins versus rotational frequencies.
175.90+y[a] *13*	J+2		B	
396.43+y[a] *20*	J+4		B	
660.80+y[a] *24*	J+6		B	
968.2+y[a] *3*	J+8		B	
1317.7+y[a] *3*	J+10		B	
1708.3+y[a] *4*	J+12		B	
2138.1+y[a] *5*	J+14		B	
2606.0+y[a] *6*	J+16		B	
3111.9+y[a] *9*	J+18		B	
3654.5+y[a] *10*	J+20		B	

† From level scheme and Adopted Gamma radiations by using least-squares fit to Eγ. ΔEγ=1 keV assumed for Eγ′s with unstated uncertainty quoted.

‡ Based on deduced transition multipolarities using γ(θ) in (HI,xnγ) (1990Ma14), except as noted.

\# From γ(t) in (HI,xnγ) (1991Al15,1990Ma14,1986Ma31), except as noted.

@ Band(A): quadrupole collective band. Members of the band: 0⁺ to 6⁺.

& Band(B): oblate collective band. Members of the band: 2⁺ to 4⁺.

a Band(C): SD band (1996Mc01,2005Jo03). Percent population <0.3 (1996Mc01). SD excitation energy is estimated at 6.2 MeV *5* at spin of 21 and 3.9 MeV at spin of 0; SD well depth is estimated ≈3.3 MeV *5* at spin of 11 (2005Jo03).

Adopted Levels, Gammas (continued)

$\gamma(^{198}Po)$

All data are from (HI,xnγ), except as noted.

E_i(level)	J^π_i	E_γ	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[@]	Comments
604.94	2^+	605.0 *1*	100	0.0	0^+	E2	0.0207	
816.0	0^+	211	45 *36*	604.94	2^+			
		816	100 *36*	0.0	0^+	E0		
1039.13	2^+	434.2 *2*	100 *22*	604.94	2^+			
		1038.9 *2*	48 *22*	0.0	0^+			
1158.39	4^+	553.5 *1*	100	604.94	2^+	E2	0.0253	
1483.35	4^+	324.7 *2*	95 *24*	1158.39	4^+			
		444.0 *2*	100 *17*	1039.13	2^+			
1717.56	6^+	559.2 *1*	100	1158.39	4^+	E2	0.0247	
1808.41	5^-	324.7 *2*	20 *5*	1483.35	4^+			
		650.1 *1*	100 *5*	1158.39	4^+	E1	0.00606	
1853.63	8^+	136.1 *2*	100	1717.56	6^+	E2	2.01	B(E2)(W.u.)=2.03 *15*
1874.96	(6^+)	391.5 *2*	<14.3	1483.35	4^+			
		716.6 *2*	100 *14*	1158.39	4^+	E2	0.01437	
2114.33	7^-	239.3 *2*	28 *6*	1874.96	(6^+)	E1	0.0532	
		305.9 *1*	100 *6*	1808.41	5^-	E2	0.1189	
		396.8 *3*	22 *11*	1717.56	6^+	E1	0.01676	
2287.60	8^-	173.2 *2*	100	2114.33	7^-			
2324.73	9^-	210.4 *1*	83 *6*	2114.33	7^-	E2	0.395	
		471.1 *1*	100 *6*	1853.63	8^+	E1	0.01162	
2344.6	(8^+)	627.0 *2*	100	1717.56	6^+			
2565.92	11^-	241.2 *2*	7.5 *11*	2324.73	9^-	E2	0.250	B(E2)(W.u.)=0.0033 *6*
		712.3 *1*	100 *4*	1853.63	8^+	E3	0.0396	B(E3)(W.u.)=25 *3*
2620.50	(8^+)	766.8 *2*	44 *11*	1853.63	8^+	(E2)	0.01249	
		903.0 *2*	100 *11*	1717.56	6^+	E2	0.00898	
2641.33	9^-	316.6 *2*	<36	2324.73	9^-			
		527.0 *2*	100 *21*	2114.33	7^-			
2691.86	10^+	126.0 *2*	100 *13*	2565.92	11^-	E1	0.256	
		367.1 *1*	71 *8*	2324.73	9^-	E1	0.0199	
		838.3 *2*	21 *4*	1853.63	8^+	E2	0.01042	
2813.1	10^-	488.5 *3*	52 *14*	2324.73	9^-			
		525.4 *2*	100 *14*	2287.60	8^-			
2900.43	11^-	575.7 *1*	100	2324.73	9^-	(E2)	0.0231	
2963.8		619.2 *3*	100	2344.6	(8^+)			
3010.2	(10^+)	665.6 *3*	100	2344.6	(8^+)			
3174.5	(11^-)	533.2 *2*	100	2641.33	9^-			
3308.6	12^-	495.5 *2*	100	2813.1	10^-			
3465.3	13^-	564.9 *2*	100	2900.43	11^-	E2	0.0242	
3646.1	(13^-)	471.6 *3*	70 *30*	3174.5	(11^-)			
		745.7 *3*	100 *40*	2900.43	11^-			
3801.9		336.6 *2*	100	3465.3	13^-			
3868.4	14^-	559.8 *2*	100	3308.6	12^-			
4052.2		406.1 *3*	100	3646.1	(13^-)			
4086.4	(15^-)	621.1 *2*	100	3465.3	13^-			
4322.1	(16^-)	453.7 *2*	100	3868.4	14^-			
4521.0		434.6 *2*	100	4086.4	(15^-)			
4596.0		273.9 *2*	100	4322.1	(16^-)			
3149.81+x?		457.8[&] *2*	100	2691.86+x	12^+			
3241.36+x	14^+	549.5 *1*	100	2691.86+x	12^+			
3444.4+x		752.5 *3*	100	2691.86+x	12^+			
3579.24+x		337.8 *2*	100 *20*	3241.36+x	14^+			

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Adopted Levels, Gammas (continued)

$\gamma(^{198}Po)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]
3579.24+x		429.7[&] *3*		3149.81+x?			
3782.95+x	16^+	541.6 *1*	100	3241.36+x	14^+		
3984.76+x		743.4 *2*	100	3241.36+x	14^+		
4010.62+x	16^+	227.8 *3*	13 *3*	3782.95+x	16^+		
		431.2 *3*	33 *7*	3579.24+x			
		769.3 *2*	100 *10*	3241.36+x	14^+		
4391.80+x	17	381.2 *2*	100 *13*	4010.62+x	16^+		
		608.8 *3*	38 *8*	3782.95+x	16^+		
4407.65+x	18^+	624.7 *2*	100	3782.95+x	16^+		
4662.1+x		270.3 *2*	100	4391.80+x	17		
5113.2+x		705.5 *3*	100	4407.65+x	18^+		
175.90+y	J+2	175.90 *13*	100	y	J	[E2][#]	0.749
396.43+y	J+4	220.53 *14*	100	175.90+y	J+2	[E2][#]	0.336
660.80+y	J+6	264.37 *13*	100	396.43+y	J+4	[E2][#]	0.186
968.2+y	J+8	307.41 *16*	100	660.80+y	J+6	[E2][#]	0.1172
1317.7+y	J+10	349.52 *13*	100	968.2+y	J+8	[E2][#]	0.0810
1708.3+y	J+12	390.58 *19*	100	1317.7+y	J+10	[E2][#]	0.0598
2138.1+y	J+14	429.77 *21*	100	1708.3+y	J+12	[E2][#]	0.0466
2606.0+y	J+16	467.9 *3*	100	2138.1+y	J+14	[E2][#]	0.0377
3111.9+y	J+18	505.9 *7*	100	2606.0+y	J+16	[E2][#]	0.0312
3654.5+y	J+20	542.6 *4*	100	3111.9+y	J+18	[E2][#]	0.0265

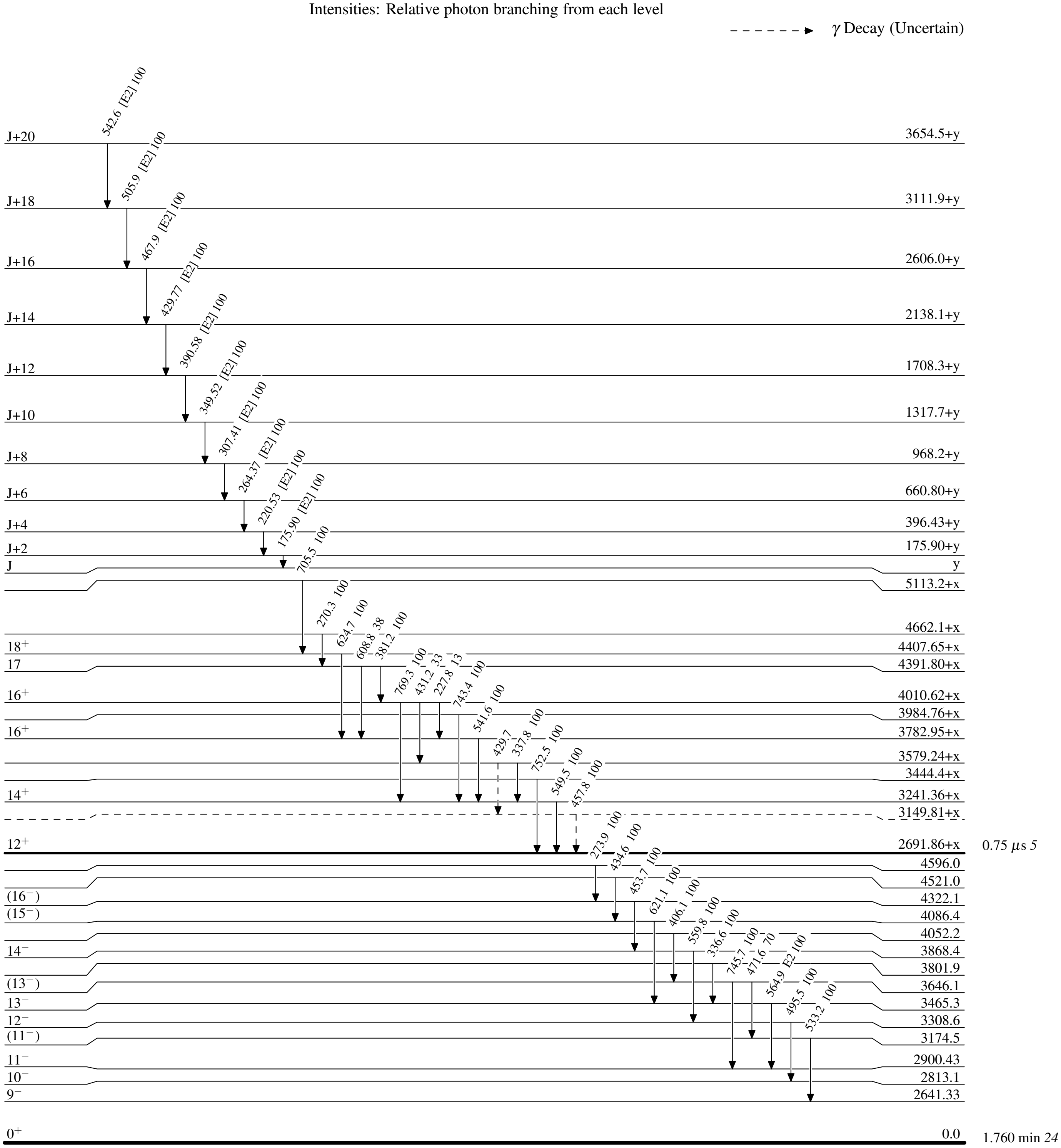
† Relative photon branching from each level. For SD band, values are relative transition intensities within the band.
‡ From $\gamma(\theta)$ in (HI,xnγ), except as noted.
# Assumed an SD structure of E2 transitions in 1996Mc01.
@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
& Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

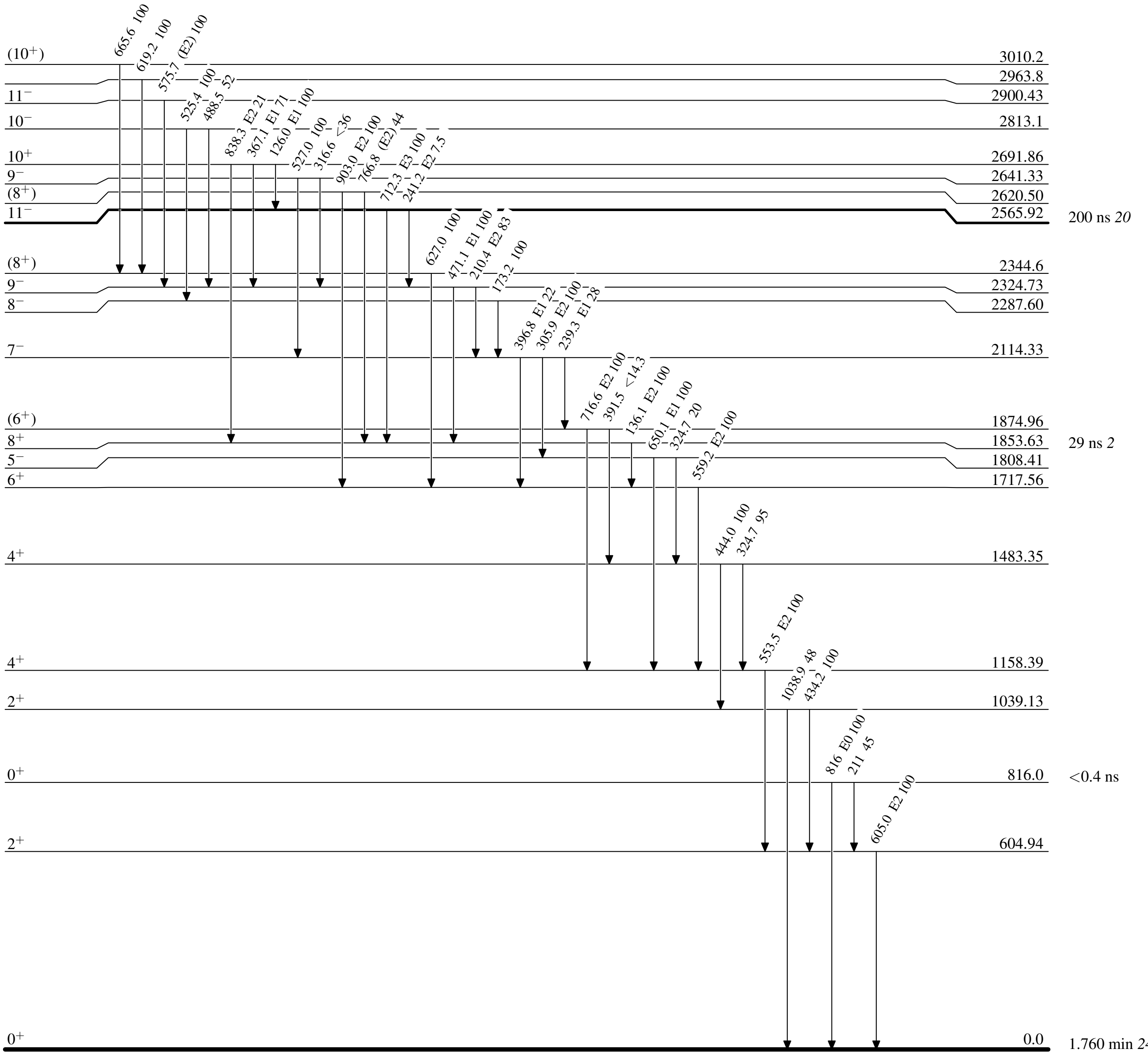


$^{198}_{84}Po_{114}$

Adopted Levels, Gammas

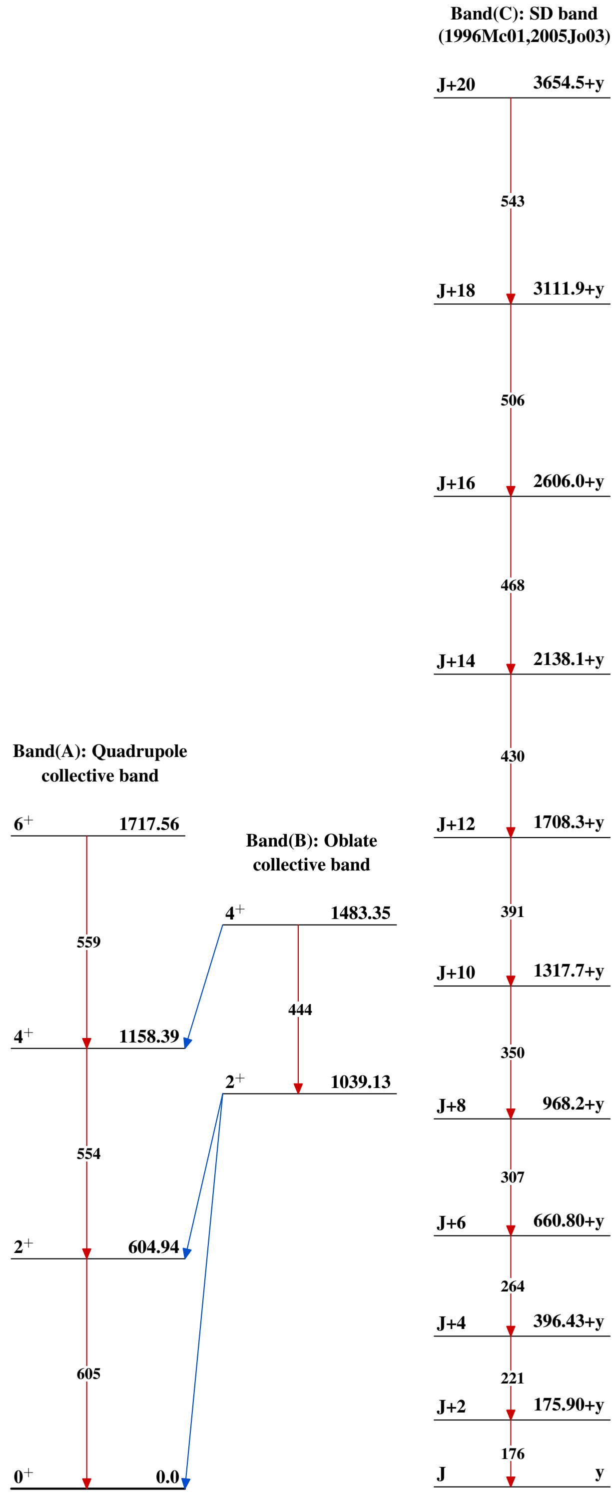
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{198}_{84}Po_{114}$

Adopted Levels, Gammas



$^{198}_{84}Po_{114}$