Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong	NDS 108,1093 (2007)	1-Jan-2006

Q(β^-)=−4.53×10^3 *3*; S(n)=8055 *25*; S(p)=1.58×10^3 *4*; Q(α)=5.44×10^3 *4* 2012Wa38

Note: Current evaluation has used the following Q record −4535 288057 251584 345438 40 2003Au03.

The isotope produced in natural Re(^{16}O,xn) reaction (1987Va09). The ε decay, IT decay, and α decay studies (1984Va11, 1987Va09, 1991Va04, 1992Hu04) suggest population of three isomers; the 308-s isomer corresponds to the g.s. of ^{196}Bi with a probable J^π=2$^+$,3$^+$.

Nuclear structure calculation: 1991Ch36.

Yield measurement in heavy ion reactions: 1985Hu06.

^{196}Bi Levels

Cross Reference (XREF) Flags

A	^{196}Bi IT decay (240 s)	D	^{200}At α decay (43 s)
B	^{200}At α decay (3.5 s)	E	(HI,xnγ):SD
C	^{200}At α decay (47 s)		

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	(3$^+$)	308 s *12*	ABCD	%ε+%β^+≈100; %α=0.00115 *34* (1991Va04) J$^\pi$: from comparison to ^{194,192}Bi ground state and probable configuration=((π h$_{9/2}$)(ν f$_{5/2}$)+(ν f$_{7/2}$)) (1987Va09). ε decay feeding to low-spin states in ^{196}Pb (up to J=5 quoted by 1991Va04). π: 158γ M3 from (5$^+$,6$^+$) state. T$_{1/2}$: the data of 1987Va09 supersede 308 s *6* of 1984Va11 from γ(t).
158.3 *3*	(6$^+$)		ABC	J$^\pi$: 158γ M3 to (3$^+$), probable configuration=((π 1h$_{9/2}$)(ν f$_{7/2}$)(ν f$_{5/2}$)). T$_{1/2}$: from γ(t), 158γ's short-lived component (1987Va09). This is two times faster than the Weisskopf estimate for an M3 transition. Besides a direct feeding (0.6 s component), this (5$^+$,6$^+$) state has to Be fed via 210 s *20* component.
169 *4*	(7$^+$)	0.6 s *5*	ABC	%IT=?; %ε+%β^+=? E(level): from ΔQ(α). J$^\pi$: probable configuration=((π 1h$_{9/2}$)(ν f$_{7/2}$)+(ν f$_{5/2}$)) (1987Va09). T$_{1/2}$: from γ(t) (1987Va09).
271 *5*	(10$^-$)	240 s *3*	ABC	%ε+%β^+=74.2 *25*; %IT=25.8 *25*; %α=0.00038 *10* (1991Va04) J$^\pi$: 102γ (E3) to (7$^+$), probable configuration=((π 1h$_{9/2}$)(ν i$_{13/2}$)) (1987Va09). Other: %ε+%β^+=78, %IT=21, %α=0.0003 *1* (1992Hu04). T$_{1/2}$: from γ(t) (1987Va09).
x‡	J≈(7)		E	E(level): level energy held fixed in least-squares adjustment. J$^\pi$: from 2004PrZY, value is within 2 units.
124.0+x *3*	J+2		E	
289.7+x‡ *5*	J+4		E	
497.3+x‡ *7*	J+6		E	
746.8+x‡ *8*	J+8		E	
1037.7+x‡ *9*	J+10		E	
1370.3+x‡ *10*	J+12		E	
1743.8+x‡ *11*	J+14		E	
2157.1+x‡ *11*	J+16		E	
2611.7+x‡ *12*	J+18		E	
3106.5+x‡ *13*	J+20		E	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{196}Bi Levels (continued)

E(level)[†]	J^π	XREF
3641.6+x[‡] *14*	J+22	E
4216.5+x[‡] *15*	J+24	E
4830.5+x[‡] *16*	J+26	E
5484.7+x[‡] *18*	J+28	E

[†] From Eγ's.
[‡] Band(A): SD band (1996Cl01,2004PrZY). percent population <2 (1996Cl01) of ^{196}Bi channel.

γ(^{196}Bi)

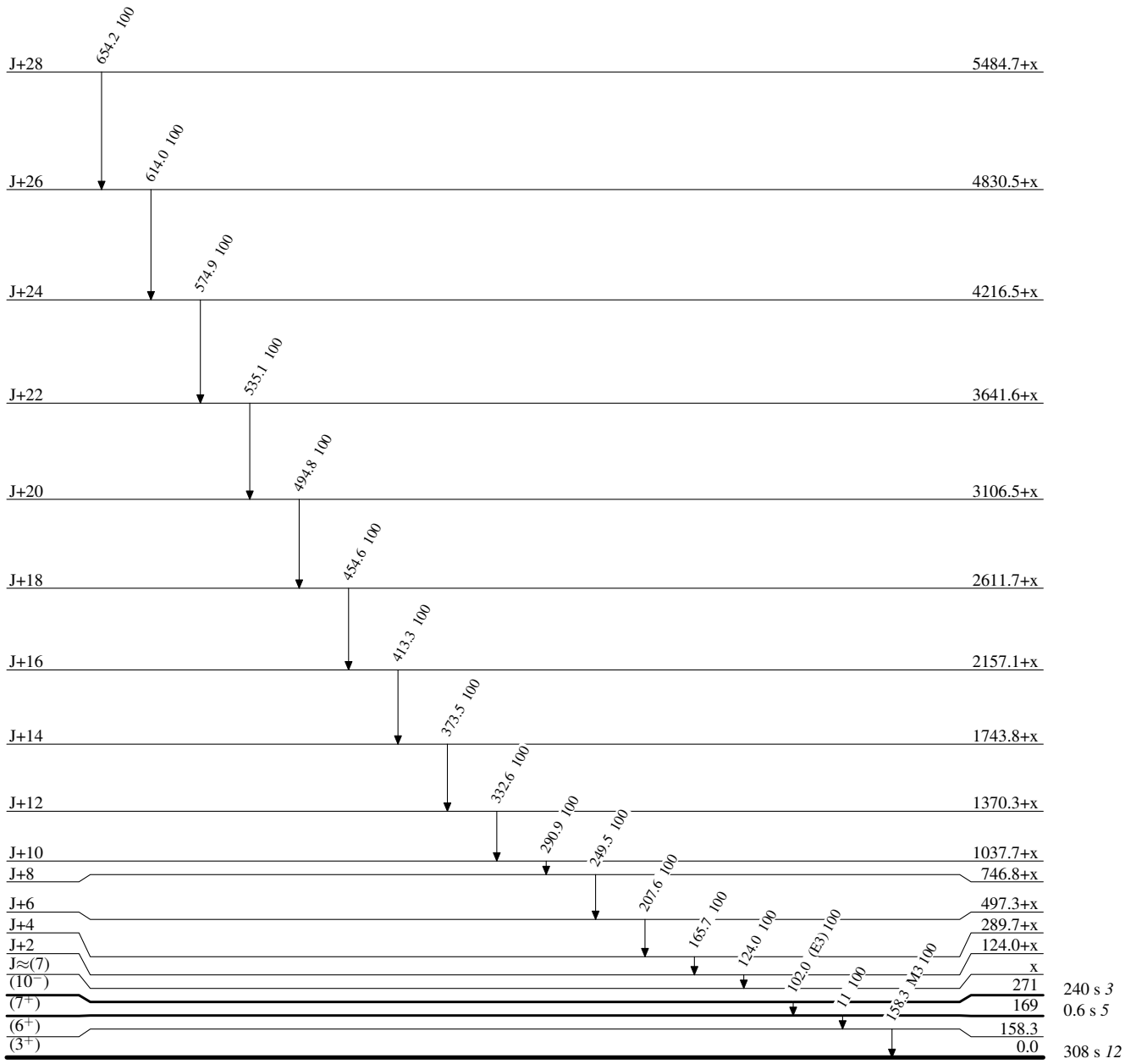
E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	α[#]	Comments
158.3	(6^+)	158.3 *3*	100	0.0	(3^+)	M3	77.3	ce(K)/(γ+ce)=0.401 *7*; ce(L)/(γ+ce)=0.426 *8*; ce(M)/(γ+ce)=0.121 *3*; ce(N+)/(γ+ce)=0.0386 *9* Mult.: from α(K)exp, α(K)exp/α(L)exp data in ^{196}Bi IT decay. This transition has short-lived (0.6 s) and long-lived (210 s *20*) components.
169	(7^+)	11 *4*	100	158.3	(6^+)			E_γ: from difference between 169-keV level and 158-keV level, unobserved.
271	(10^-)	102.0 *20*	100	169	(7^+)	(E3)	155	ce(K)/(γ+ce)=0.0025 *5*; ce(L)/(γ+ce)=0.72 *7*; ce(M)/(γ+ce)=0.21 *4*; ce(N+)/(γ+ce)=0.064 *11* B(E3)(W.u.)=3.2×10^{-5} *6* 98.7 keV *4* E- line with $T_{1/2}$=248 s *10* and 87 keV *2* E- line with $T_{1/2}$=280 s *100* are good candidates for the L and M conversion lines of the 102 keV transition.
124.0+x	J+2	124.0[‡] *3*	100	x	J≈(7)			
289.7+x	J+4	165.7[‡] *4*	100	124.0+x	J+2			
497.3+x	J+6	207.6[‡] *4*	100	289.7+x	J+4			
746.8+x	J+8	249.5[‡] *4*	100	497.3+x	J+6			
1037.7+x	J+10	290.9[‡] *4*	100	746.8+x	J+8			
1370.3+x	J+12	332.6[‡] *4*	100	1037.7+x	J+10			
1743.8+x	J+14	373.5[‡] *4*	100	1370.3+x	J+12			
2157.1+x	J+16	413.3[‡] *4*	100	1743.8+x	J+14			
2611.7+x	J+18	454.6[‡] *5*	100	2157.1+x	J+16			
3106.5+x	J+20	494.8[‡] *5*	100	2611.7+x	J+18			
3641.6+x	J+22	535.1[‡] *5*	100	3106.5+x	J+20			
4216.5+x	J+24	574.9[‡] *5*	100	3641.6+x	J+22			
4830.5+x	J+26	614.0[‡] *6*	100	4216.5+x	J+24			
5484.7+x	J+28	654.2[‡] *8*	100	4830.5+x	J+26			

[†] From it decay,except as noted.
[‡] From (HI,xnγ):SD.
[#] 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.

Adopted Levels, Gammas

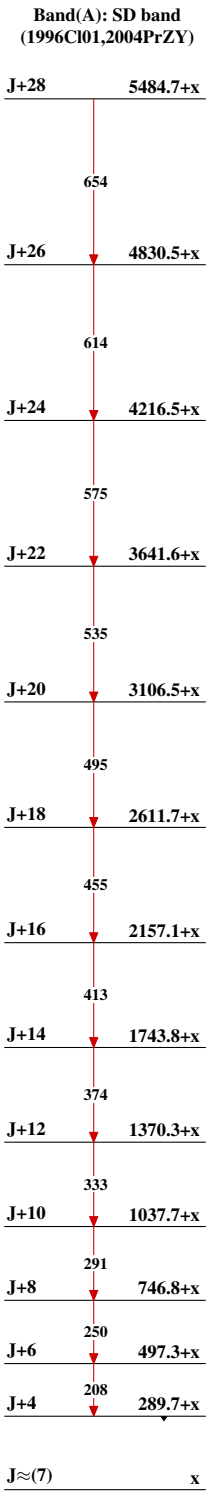
Level Scheme

Intensities: Relative photon branching from each level



$^{196}_{83}Bi_{113}$

Adopted Levels, Gammas



$^{196}_{83}Bi_{113}$