

Adopted Levels, Gammas

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

$Q(\beta^-) = -9.57 \times 10^3$ 4; $S(n) = 1.049 \times 10^4$ 4; $S(p) = 2746$ 14; $Q(\alpha) = 6658.0$ 25 [2012Wa38](#)

Note: Current evaluation has used the following Q record -9551 6110471 412740 146657 3 [2003Au03](#).

Data for the excited states are from $^{160}\text{Dy}(^{40}\text{Ar}, 4n\gamma)$ study ([1991Al15](#)). Data for ground state are from its α decay.

$\Delta\langle r^2 \rangle$, monopole strength are available, see [1989De18](#).

Nuclear structure calculations: [1977Ma14](#), [1988Sa37](#), [1991Sa12](#), [1997Ci07](#).

Cross section and yield measurements: [1982LeZN](#), [1982Si11](#), [1984Da14](#).

α -decay calculation: [1979Po23](#), [1988Hu03](#).

 ^{196}Po LevelsCross Reference (XREF) Flags

- A** (HI,xn γ)
B ^{196}Po IT decay (856 ns)
C ^{200}Rn α decay (0.96 s)

E(level) [†]	J^π [‡]	$T_{1/2}$ [#]	XREF	Comments
0.0@	0 ⁺	5.8 s 2	ABC	$\% \alpha \approx 98$; $\% \varepsilon + \% \beta^+ \approx 2$ $T_{1/2}$: from 1993Wa04 and 1985Va03 . Others: 5.5 s 5 (1967Si09), 6.8 s 3 (1996Ta18), 5.5 s 1 (1997Pu01), 5.1 s +31-14 (2005Uu02). From systematics of β -strength function (1973Ta30). Other: $\% \alpha = 94$ 5, α reduced width: 73 keV 5, $E\alpha = 6521$ keV 5 (1993Wa04).
463.12@ 9	2 ⁺		ABC	
558 7	0 ⁺		C	J^π : HF $\approx$ 92 from 0 ⁺ ^{200}Rn α decay to this level.
859.05 11	2 ⁺	<12 ns	AB	$T_{1/2}$: from time-difference spectra, 2σ upper limit.
890.99@ 12	4 ⁺		AB	
1387.75 13	4 ⁺		AB	
1390.10@ 15	6 ⁺		AB	
1525.1 5			AB	
1802.04& 15	5 ⁻		AB	
1907.3 4			AB	
1940.34@ 19	8 ⁺		AB	
1974.25 23	8 ⁺		A	
2039.32& 17	7 ⁻		AB	
2292.75& 20	9 ⁻		AB	
2304.5 9			AB	
2493.9& 4	11 ⁻	856 ns 17	AB	$T_{1/2}$: From 1998CiZY . Other: 850 ns 90 (1995Be31).
2591.39 24	10 ⁺		A	
2650.6 9			A	
2778.50 22	(10 ⁺)		A	
2979.0 3	11 ⁽⁻⁾		A	
3083.6 13			A	
3343.8 3	(12 ⁺)		A	
3609.6 17			A	
3646.7 4	13 ⁽⁻⁾		A	

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Adopted Levels, Gammas (continued) ^{196}Po Levels (continued)[†] From least-squares fit to E_{γ} 's.[‡] From $\gamma\gamma(\theta)$ of oriented nuclei in (HI,xn γ) (1995Be31), except as noted.

From time-difference spectra.

@ Band(A): $K^{\pi}=0^{+}$ ground-state band. Involving the low energy (π h_{9/2})² configuration as well as neutron-hole pair admixtures.& Band(B): Negative-parity collective rotational band Built on an intruder 4p2h quasiparticle configuration, involving a neutron (i13/2) hole coupled to a proton (h_{9/2}) or f neutron hole.

$\gamma(^{196}\text{Po})$								
$E_i(\text{level})$	J_i^{π}	$E_{\gamma}^{\dagger}$	$I_{\gamma}^{\#}$	E_f	J_f^{π}	Mult. [‡]	$\alpha^{\text{@}}$	Comments
463.12	2 ⁺	463.09 9	100	0.0	0 ⁺	E2	0.0387	$\alpha(K)=0.0260$ 4; $\alpha(L)=0.00954$ 14; $\alpha(M)=0.00241$ 4; $\alpha(N+..)=0.000756$ 11
859.05	2 ⁺	395.82 12	64 2	463.12	2 ⁺	[M1+E2]	0.15 9	$\alpha(K)=0.11$ 8; $\alpha(L)=0.025$ 9; $\alpha(M)=0.0060$ 19; $\alpha(N+..)=0.0019$ 7 B(M1)(W.u.)>2.7×10 ⁻⁶ ; B(E2)(W.u.)>0.0066
		859.2 2	100 3	0.0	0 ⁺	E2	0.0099 1	$\alpha(K)=0.00769$ 11; $\alpha(L)=0.001685$ 24; $\alpha(M)=0.000408$ 6; $\alpha(N+..)=0.0001289$ 18 B(E2)(W.u.)>0.00085
890.99	4 ⁺	427.89 9	100 2	463.12	2 ⁺	E2	0.0472	$\alpha(K)=0.0307$ 5; $\alpha(L)=0.01236$ 18; $\alpha(M)=0.00314$ 5; $\alpha(N+..)=0.000983$ 14
1387.75	4 ⁺	496.74 10	100 2	890.99	4 ⁺	[M1+E2]	0.08 5	$\alpha(K)=0.06$ 5; $\alpha(L)=0.013$ 6; $\alpha(M)=0.0031$ 12; $\alpha(N+..)=0.0010$ 4
		528.61 11	82 3	859.05	2 ⁺	E2	0.0282	$\alpha(K)=0.0198$ 3; $\alpha(L)=0.00631$ 9; $\alpha(M)=0.001579$ 23; $\alpha(N+..)=0.000496$ 7
1390.10	6 ⁺	925.4 499.11 10	100	463.12 2 ⁺ 890.99 4 ⁺		E2	0.0323	$\alpha(K)=0.0223$ 4; $\alpha(L)=0.00755$ 11; $\alpha(M)=0.00190$ 3; $\alpha(N+..)=0.000595$ 9
1525.1		669.5	100	859.05	2 ⁺			
1802.04	5 ⁻	277.8 5 414.24 8	25 7 100 2	1525.1 1387.75	4 ⁺	E1	0.0152 8	$\alpha(K)=0.01254$ 18; $\alpha(L)=0.00210$ 3; $\alpha(M)=0.000492$ 7; $\alpha(N+..)=0.0001547$ 22
		911.5 3	45 1	890.99	4 ⁺	[E1]	0.00321	$\alpha(K)=0.00267$ 4; $\alpha(L)=0.000417$ 6; $\alpha(M)=9.68\times 10^{-5}$ 14; $\alpha(N+..)=3.06\times 10^{-5}$ 5
1907.3		516.1		1387.75	4 ⁺			
		517.6 4	100 33	1390.10	6 ⁺			
1940.34	8 ⁺	550.29 11	100	1390.10	6 ⁺	E2	0.0256	$\alpha(K)=0.0182$ 3; $\alpha(L)=0.00559$ 8; $\alpha(M)=0.001395$ 20; $\alpha(N+..)=0.000438$ 7
1974.25	8 ⁺	583.9 2	100	1390.10	6 ⁺	E2	0.0225	$\alpha(K)=0.01622$ 23; $\alpha(L)=0.00471$ 7; $\alpha(M)=0.001171$ 17; $\alpha(N+..)=0.000368$ 6
2039.32	7 ⁻	133.8 237.28 9	100	1907.3 1802.04	5 ⁻	E2	0.263	$\alpha(K)=0.1138$ 16; $\alpha(L)=0.1110$ 16; $\alpha(M)=0.0292$ 5; $\alpha(N+..)=0.00906$ 13
		649		1390.10	6 ⁺			
2292.75	9 ⁻	253.45 10	100	2039.32	7 ⁻	E2	0.212	$\alpha(K)=0.0978$ 15; $\alpha(L)=0.0847$ 13; $\alpha(M)=0.0222$ 4; $\alpha(N+..)=0.00690$ 11
2304.5		265	100	2039.32	7 ⁻			
2493.9	11 ⁻	198 552	100	2292.75 1940.34	9 ⁻ 8 ⁺	E3	0.0809	$\alpha(K)=0.0444$ 7; $\alpha(L)=0.0272$ 4; $\alpha(M)=0.00710$ 10; $\alpha(N+..)=0.00223$ 4 B(E3)(W.u.)=37 4
2591.39	10 ⁺	616.9 2	100 2	1974.25	8 ⁺	E2	0.0198	$\alpha(K)=0.01452$ 21; $\alpha(L)=0.00402$ 6; $\alpha(M)=0.000994$ 14; $\alpha(N+..)=0.000313$ 5
		651.3 2	16 2	1940.34	8 ⁺			
2650.6		346 358		2304.5 2292.75	9 ⁻			

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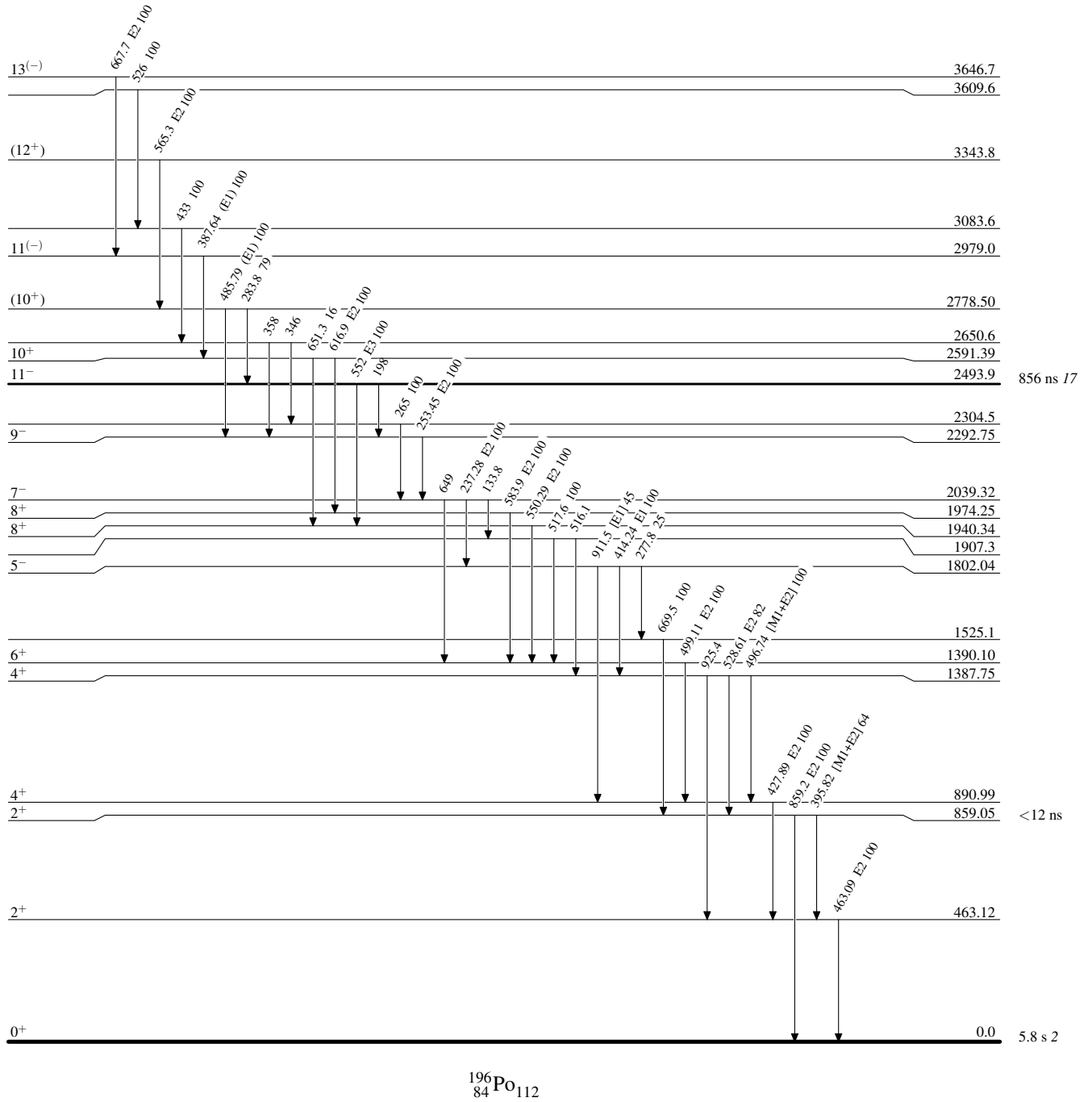
Adopted Levels, Gammas (continued)

$\gamma(^{196}\text{Po})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\#$	E_f	J_f^π	Mult. ‡	$\alpha^\@$	Comments
2778.50	(10 ⁺)	283.8 4 485.79 10	79 21 100 2	2493.9 2292.75	11 ⁻ 9 ⁻	(E1)	0.0109	$\alpha(\text{K})=0.00897$ 13; $\alpha(\text{L})=0.001477$ 21; $\alpha(\text{M})=0.000345$ 5; $\alpha(\text{N}+..)=0.0001088$ 16
2979.0	11 ⁽⁻⁾	387.64 12	100	2591.39	10 ⁺	(E1)	0.0176	$\alpha(\text{K})=0.01440$ 21; $\alpha(\text{L})=0.00243$ 4; $\alpha(\text{M})=0.000569$ 9; $\alpha(\text{N}+..)=0.000179$ 3
3083.6		433	100	2650.6				
3343.8	(12 ⁺)	565.3 2	100	2778.50	(10 ⁺)	E2	0.0241	$\alpha(\text{K})=0.01726$ 25; $\alpha(\text{L})=0.00516$ 8; $\alpha(\text{M})=0.001286$ 18; $\alpha(\text{N}+..)=0.000404$ 6
3609.6		526	100	3083.6				
3646.7	13 ⁽⁻⁾	667.7 2	100	2979.0	11 ⁽⁻⁾	E2	0.0170	$\alpha(\text{K})=0.01243$ 18; $\alpha(\text{L})=0.00322$ 5; $\alpha(\text{M})=0.000794$ 12; $\alpha(\text{N}+..)=0.000250$ 4

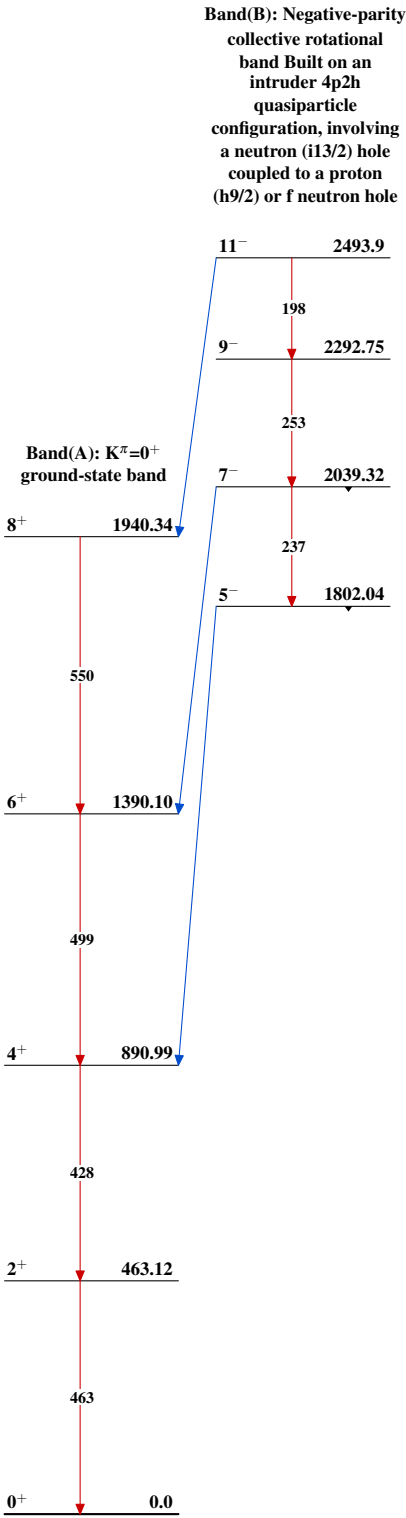
[†] From (HI,xn γ) ([1995Be31](#),[1999Ta03](#)).[‡] From DCO ratios and approximate values of total conversion coefficients.[#] Relative branching intensity from each level in (HI,xn γ).[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



Adopted Levels, Gammas



$^{196}_{84}\text{Po}_{112}$