Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 110, 999 (2009)	1-Nov-2008

Q(β^-)=−8607 *17*; S(n)=8370 *14*; S(p)=208×10[1] *18*; Q(α)=6395 *6* 2003Au03

Assignment:
^{155}Gd(^{40}Ar,8n) excit (1972Ga27, 1974Le02),
^{150}Sm(^{40}Ca,3n) excit (1980Sc09, 1975Ca06),
^{142}Nd(^{48}Ti,3n) Mass Spectrometer (1980Sc09, 1981Mi12),
^{107}Ag(^{84}Kr,p3n) Mass Spectrometer (1981Mi12).

^{187}Pb Levels

Cross Reference (XREF) Flags

A ^{191}Po α decay (22 ms)
B ^{191}Po α decay (93 ms)
C ^{155}Gd(^{36}Ar,4nγ)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0	(3/2$^-$)	15.2 s *3*	ABC	%α=9.5 *20* %ε+%β^+=90.5 *20* %α: From 2002An19, Other: 7 *2* (1999An36). %ε+%β^+: 100%-%α. J$^\pi$: (ν p$_{3/2}$)⊗π(0p−0h) configuration suggested in 1999An10. From systematics of g.s. J$^\pi$ in ^{189}Pb, ^{193}Pb, ^{195}Pb, ^{197}Pb, and ^{199}Pb, the low-spin isomer is expected to be the ground state. $T_{1/2}$: measurement of 1981Mi12. $\Delta<r^2>(^{187}Pb,^{208}Pb)$=−0.993 *10* fm^2 (2007De09).
33[@] *13*	(13/2$^+$)	18.3 s *3*	ABC	%α=12 *2* (1999An36); %ε+%β^+=88 *2* Additional information 1. %α: From 1999An36. %α=2.0 estimated by 1974Le02 from comparison of Iα(6073) with the ^{196}Po α produced by ^{164}Dy(^{40}Ar,8n) reaction. %α=0.7 was estimated by 1972Ga27 from comparison of cross sections for the formation of Pb and Po nuclides by ^{155}Gd(^{40}Ar,xn) and ^{164}Dy(^{40}Ar,xn) reactions. E(level): From ^{187}Pb and ^{187}Pb^m mass measurements by 2005We11. 2 keV *15* is established in ^{191}Po α decay (22 ms). 19 keV *10* in 2012Wa38-AME. J$^\pi$: analogous to high-spin isomers of ^{193}Pb, ^{195}Pb, ^{197}Pb; (ν i$_{13/2}$)⊗π(0p−0h) configuration suggested in 1999An10. $T_{1/2}$: measurement of 1981Mi12. Other measured values: 17.5 s *36* (1972Ga27), 17 s *4* (1974Le02). $\Delta<r^2>(^{187}Pb,^{208}Pb)$=−1.025 *10* fm^2 (2007De09).
375.0 *10*	(3/2$^-$)	<10[#] ns	A	E(level): Relative to the 33 keV level. For absolute energy ΔE=13 keV of the 33 keV level should be considered in propagation. J$^\pi$: (ν p$_{3/2}$)⊗π(2p−2h) configuration suggested in 1999An10.
505.0 *10*	(9/2$^+$)		B	J$^\pi$: from 472γ (E2) to (13/2$^+$) and HF of the 6909α decay (2002An19).
527.0 *10*	(13/2$^+$)	<10[#] ns	B	J$^\pi$: from 494γ (M1) to (13/2$^+$), HF, and the J$^\pi$ of the parent nucleus (2002An19). Possible configuration (ν i$_{13/2}$)⊗π(2p−2h). $T_{1/2}$: based on observation of 6888α and 494γ in prompt coincidence (1999An10).
607 *15*	(9/2$^+$)		B	J$^\pi$: Based on the J$^\pi$=(13/2$^+$) of 527 keV level and the (80γ) (E2).
627.0? *10*			B	
864[@]	(17/2$^+$)		C	
1280[@]	(21/2$^+$)		C	
1756[@]	(25/2$^+$)		C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{187}Pb Levels (continued)

† From G-ray energies.
‡ Values given without comment are from (^{36}Ar,4nγ), based on analogy with heavier odd-A Pb isotopes in which a sequence of three stretched Q transitions connect the yrast $25/2^+$ state to a low-energy $13/2^+$ isomer.
# Limit deduced from observation of $\alpha\gamma$ prompt coincidence in ^{191}Po α decay.
@ Band(A): π=+ yrast states (1998Ba88). Possible configuration is (ν $i_{13/2}$) − weakly coupled to near-spherical ^{186}Pb core states.

$\gamma(^{187}Pb)$

E_i(level)	J_i^π	E_γ†	I_γ	E_f	J_f^π	Mult.	α@	Comments
375.0	(3/2$^-$)	375‡ *1*	100	0.0	(3/2$^-$)	(E0+M1+E2)	≈1.1	Mult.: From α(K)exp=0.88 *30* (2002An19). α: Estimated by the evaluator from α(K)exp=0.88.
505.0	(9/2$^+$)	472# *1*	100	33	(13/2$^+$)	(E2)	0.0338	Mult.: from α(K)exp≤0.06.
527.0	(13/2$^+$)	494# *1*	100	33	(13/2$^+$)	(M1)	0.1115	B(M1)(W.u.)>1.6×10^{-5} Mult.: from α(K)exp 0.076 *20*.
607	(9/2$^+$)	(80 *15*)	100	527.0	(13/2$^+$)	(E2)	2.×10^1 *3*	Mult.,α: From α, α≥10 (2002An19).
627.0?		594#& *1*	100	33	(13/2$^+$)			
864	(17/2$^+$)	831	100	33	(13/2$^+$)			
1280	(21/2$^+$)	416	100	864	(17/2$^+$)			
1756	(25/2$^+$)	476	100	1280	(21/2$^+$)			

† From (^{36}Ar,4nγ), except otherwise noted.
‡ From ^{191}Po α decay (22 ms).
# From ^{191}Po α decay (93 ms).
@ 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.

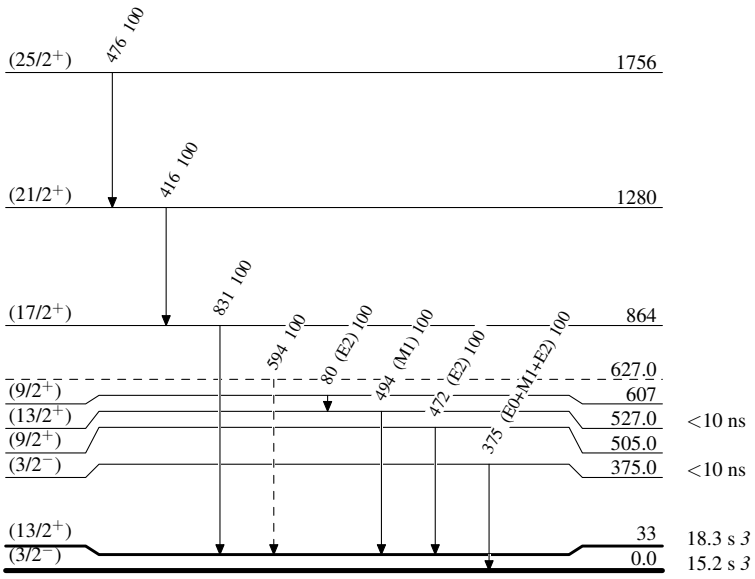
Adopted Levels, Gammas

Legend

Level Scheme

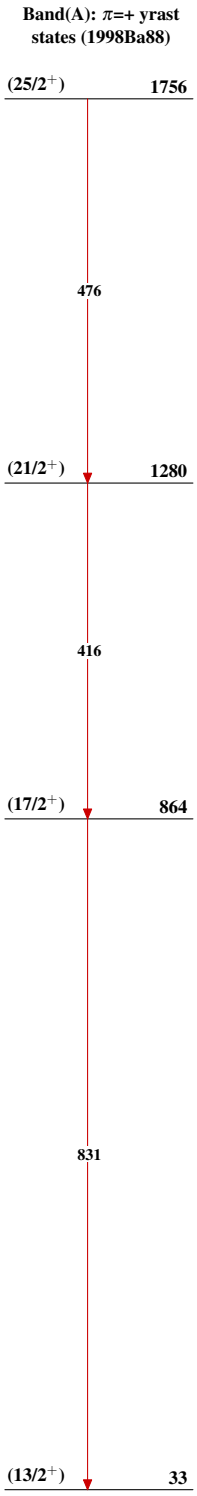
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{187}_{82}Pb_{105}$

Adopted Levels, Gammas



$^{187}_{82}Pb_{105}$