Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Q(β^-)=−11535 *20*; S(n)=11211 *20*; S(p)=2212 *23*; Q(α)=6471 *5* 2021Wa16

^{186}Pb Levels

Cross Reference (XREF) Flags

- A ^{190}Po α decay
- B ^{106}Pd(^{83}Kr,3nγ)
- C ^{142}Nd(^{48}Ti,4nγ)
- D ^{154}Gd(^{36}Ar,4nγ)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
0.0	0^+	4.81 s *3*	ABCD	%α=40 *8*; %ε+%β^+=60 *8* $\delta\langle r^2\rangle(^{186}Pb\text{-}^{208}Pb)$=−1.048 fm^2 *10* (2007De09,2009Se13); uncertainty from isotope shift is 0.005 fm^2. %α: Weighted average of 45% *20* (1997Ba25), 50% *25* (1997An09) and 38% *9* (1999An22). Others: 5% (1972Ga27), 2.4% (1974Le02). $T_{1/2}$: Weighted average of 4.79 s *5* (1980Sc09), 4.83 s *3* (1994Wa23), 4.7 s *1* (1984To09), 8 s *2* (1974Le02), 7.9 s *16* (1972Ga27).
530 *21*	(0^+)		A	Jπ: (E0) transition to 0^+ level.
649 *21*	(0^+)		A	Jπ: (E0) transition to 0^+ level.
662.16@ *19*	(2^+)	12.5 ps *35*	BCD	
922.74@ *21*	(4^+)	12.5 ps *28*	BCD	
945.30& *25*	(2^+)		B	
1259.84@ *23*	(6^+)	4.2 ps *14*	BCD	
1307.1b *5*	(3^+)		B	Jπ: Assignment based on intensity balance and sum energy arguments and level energy systematics of neighboring nuclei.
1336.9& *3*	(4^+)		B	
1643.8b *9*	(5^+)		B	
1674.65@ *25*	(8^+)	3.5 ps *14*	BCD	
1738.2& *4*	(6^+)		B	
2049.2b *10*	(7^+)		B	
2160.7@ *4*	(10^+)		BCD	
2162.3& *4*	(8^+)		B	
2286.8a *15*	(7^-)		B	Jπ: See footnote for 2518.7 keV level in ^{106}Pd(^{83}Kr,3nγ).
2518.7b *11*	(9^+)		B	
2592.8a *4*	(9^-)		B	
2625.0& *5*	(10^+)		B	
2710.3@ *6*	(12^+)		BCD	
2866.2 *6*			B	
2961.9a *5*	(11^-)		B	
3045.7b *15*	(11^+)		B	
3132.6& *6*	(12^+)		B	
3315.9@ *10*	(14^+)		B D	
3381.4a *6*	(13^-)		B	
3409.2 *12*			B	
3683.9& *11*	(14^+)		B	

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Adopted Levels, Gammas (continued)

^{186}Pb Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF
3842.7[a] *9*	(15^-)	B
3968.1[@] *11*	(16^+)	B
4341.1?[a] *12*	(17^-)	B
4636.1?[@] *23*	(18^+)	B
5309.1?[@] *25*	(20^+)	B

[†] From a least-squares fit to γ-ray energies – for levels connected by γ transitions, including uncertain placed γ-rays.
[‡] Based on γ-ray angular distribution measurements and rotational band assignments in (^{83}Kr,3nγ), except where noted.
[#] From (^{83}Kr,3nγ) using recoil distance Doppler-shift method.
[@] Band(A): Band I. Prolate band.
[&] Band(B): Band II. Oblate band.
[a] Band(C): Band III. Candidate for an octupole band.
[b] Band(D): Band IV. Possible gamma band.

γ(^{186}Pb)

E$_i$(level)	J$_i^{\pi}$	E$_\gamma$[†]	I$_\gamma$[†]	E$_f$	J$_f^{\pi}$	Mult.[†]	α[@]	Comments
530	(0^+)	530[#]		0.0	0^+	(E0)		Mult.: From ^{190}Po α decay.
649	(0^+)	649[#]		0.0	0^+	(E0)		Mult.: From ^{190}Po α decay.
662.16	(2^+)	662.2 *2*	100	0.0	0^+	(E2)	0.01548	B(E2)(W.u.)=5.6 *16* α(K)=0.01169 *17*; α(L)=0.00288 *4*; α(M)=0.000701 *10* α(N)=0.0001776 *25*; α(O)=3.41×10^{-5} *5*; α(P)=2.96×10^{-6} *5*
922.74	(4^+)	260.6 *1*	100	662.16	(2^+)	(E2)	0.178	α(K)=0.0905 *13*; α(L)=0.0654 *10*; α(M)=0.01691 *24* α(N)=0.00427 *6*; α(O)=0.000780 *11*; α(P)=4.45×10^{-5} *7* B(E2)(W.u.)=5.1×10^2 *12*
945.30	(2^+)	945.2 *3*	100	0.0	0^+	Q		
1259.84	(6^+)	337.1 *1*	100	922.74	(4^+)	(E2)	0.0823	α(K)=0.0496 *7*; α(L)=0.0245 *4*; α(M)=0.00626 *9* α(N)=0.001583 *23*; α(O)=0.000293 *5*; α(P)=1.90×10^{-5} *3* B(E2)(W.u.)=4.5×10^2 *16*
1307.1	(3^+)	361.8 *5*	100 *44*	945.30	(2^+)			
		384[&a] *4*	<122[&]	922.74	(4^+)			
		645[a] *1*	<56	662.16	(2^+)			
1336.9	(4^+)	391.5 *2*	100 *18*	945.30	(2^+)	Q		
		414.5 *5*	53 *18*	922.74	(4^+)			
		674.5 *6*	35 *13*	662.16	(2^+)			
1643.8	(5^+)	307[a] *2*	<31.6	1336.9	(4^+)			
		337[a] *1*	<36.8	1307.1	(3^+)			
		384[&a] *4*	<58[&]	1259.84	(6^+)			
		720 *2*	100 *32*	922.74	(4^+)			
1674.65	(8^+)	414.8 *1*	100	1259.84	(6^+)	(E2)	0.0468	α(K)=0.0311 *5*; α(L)=0.01186 *17*; α(M)=0.00299 *5* α(N)=0.000756 *11*; α(O)=0.0001413 *20*;

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Adopted Levels, Gammas (continued)

γ(^{186}Pb) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.†	Comments
							α(P)=1.014×10^{-5} *15* B(E2)(W.u.)=2.0×10^{2} *8* Mult.: From (^{48}Ti,4nγ) and RUL.
1738.2	(6$^+$)	401.3 *6*	100 *13*	1336.9	(4$^+$)	Q	
		478.8 *5*	69 *9*	1259.84	(6$^+$)	D	
2049.2	(7$^+$)	405.3 *6*	78 *33*	1643.8	(5$^+$)		
		790 *4*	100 *44*	1259.84	(6$^+$)		
2160.7	(10$^+$)	486.0‡ *3*	100	1674.65	(8$^+$)	Q	
2162.3	(8$^+$)	424.1 *2*	100 *12*	1738.2	(6$^+$)	Q	
		487.4 *4*	55 *14*	1674.65	(8$^+$)		
2286.8	(7$^-$)	1027 *2*	100	1259.84	(6$^+$)		
2518.7	(9$^+$)	469.5 *4*	100 *25*	2049.2	(7$^+$)		
		844 *3*	<18.8	1674.65	(8$^+$)		
2592.8	(9$^-$)	306[a] *2*	<41.7	2286.8	(7$^-$)		
		918.1 *3*	100 *33*	1674.65	(8$^+$)		
2625.0	(10$^+$)	462.7 *2*	100	2162.3	(8$^+$)		
2710.3	(12$^+$)	549.6‡ *4*	100	2160.7	(10$^+$)	Q	
2866.2		705.5 *4*	100	2160.7	(10$^+$)		
2961.9	(11$^-$)	369.1 *4*	90 *30*	2592.8	(9$^-$)		
		801.2 *5*	100 *30*	2160.7	(10$^+$)		
3045.7	(11$^+$)	527 *1*	100	2518.7	(9$^+$)		
3132.6	(12$^+$)	507.6 *3*	100	2625.0	(10$^+$)		
3315.9	(14$^+$)	605.6 *8*	100	2710.3	(12$^+$)		
3381.4	(13$^-$)	419.5 *3*	100	2961.9	(11$^-$)		
3409.2		543 *1*	100	2866.2			
3683.9	(14$^+$)	551.3 *9*	100	3132.6	(12$^+$)		
3842.7	(15$^-$)	461.3 *7*	100	3381.4	(13$^-$)		
3968.1	(16$^+$)	652.2 *5*	100	3315.9	(14$^+$)		
4341.1?	(17$^-$)	498.4[a] *7*	100	3842.7	(15$^-$)		
4636.1?	(18$^+$)	668[a] *2*	100	3968.1	(16$^+$)		
5309.1?	(20$^+$)	673[a] *1*	100	4636.1?	(18$^+$)		

† From (^{83}Kr,3nγ), except otherwise noted.
‡ Weighted ave. of data from (^{83}Kr,3nγ), (^{36}Ar,4nγ), and (^{48}Ti,4nγ).
# From level energy difference.
@ Additional information 1.
& Multiply placed with undivided intensity.
[a] Placement of transition in the level scheme is uncertain.

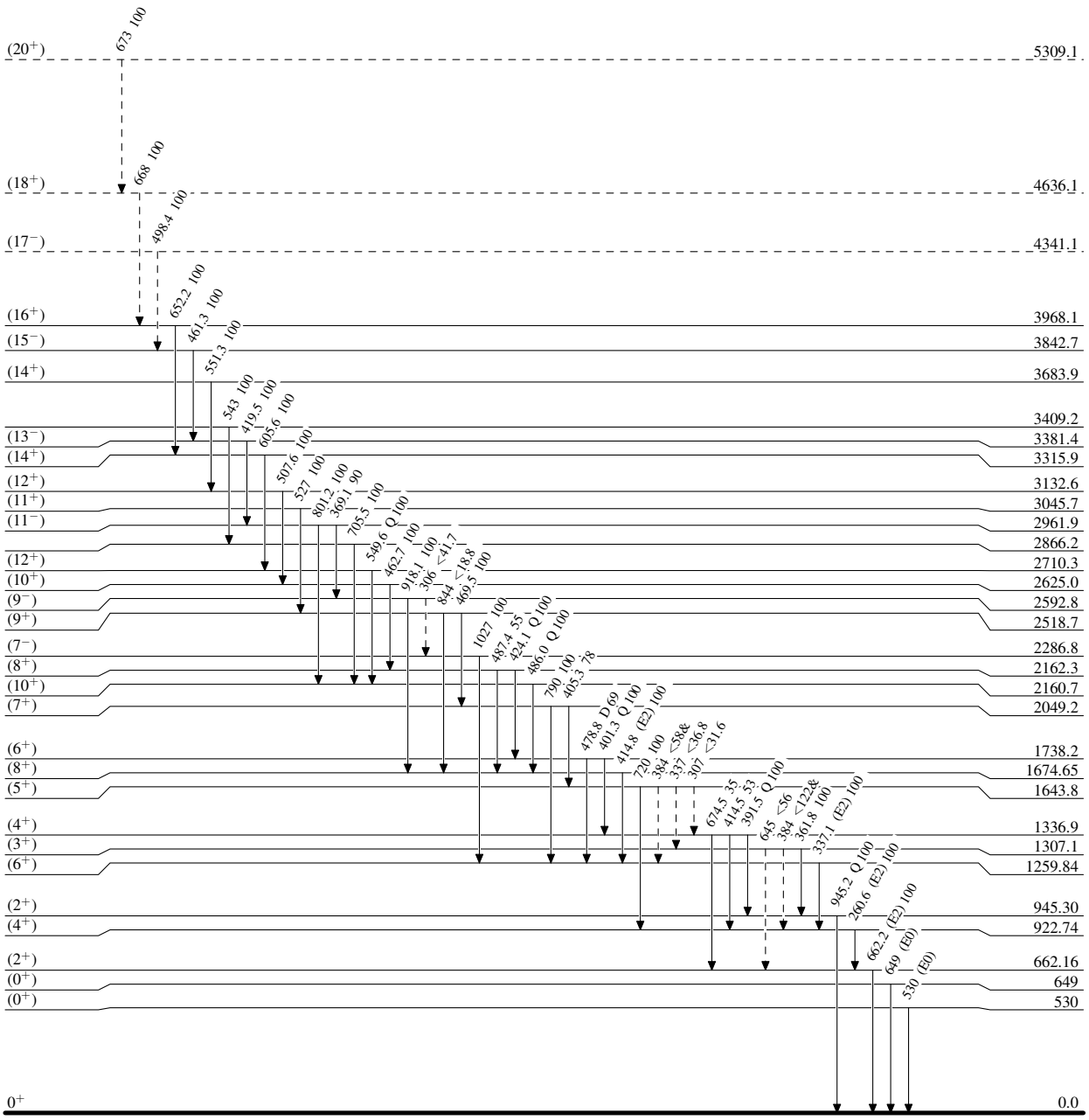
Adopted Levels, Gammas

Legend

Level Scheme

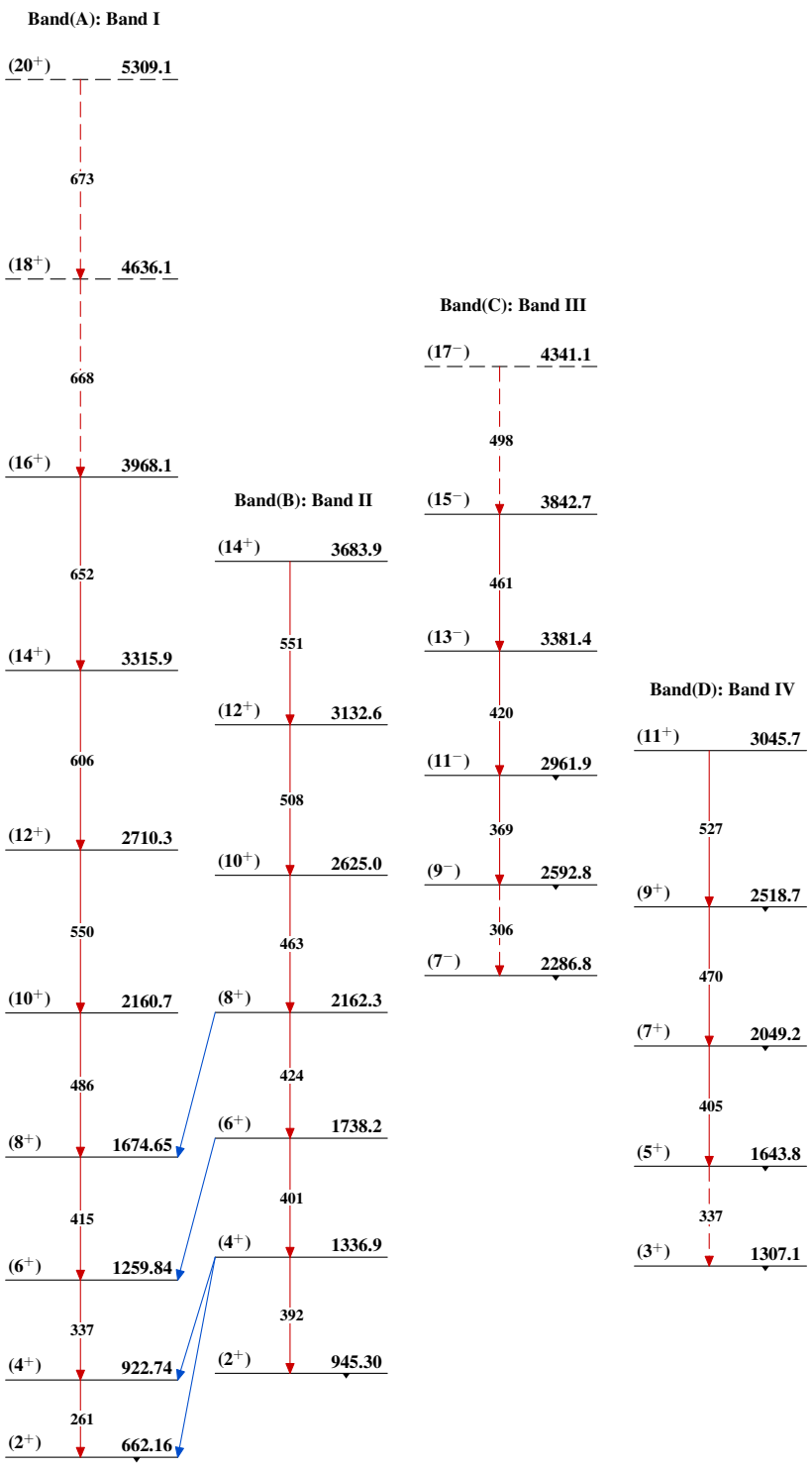
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



$^{186}_{82}Pb_{104}$

Adopted Levels, Gammas



$^{186}_{82}Pb_{104}$