^{106}Pd(^{83}Kr,3nγ) 2007Pa05,2006Gr16,2005Pa69

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

Other: 2008Gr04.

Adapted/edited the XUNDL dataset Compiled by B. Singh, (McMaster) January 3, 2007.

E=355 MeV. Measured Eγ, Iγ, $\gamma\gamma$ using recoil-decay tagging technique, JUROGAM array of 33 Eurogam detectors and nine GASP type Compton-suppressed Ge detectors (2006Gr16, 2005Pa69). Fusion-evaporation residues separated using RITU gas-filled recoil separator, and deposited in the GREAT spectrometer. Gamma-rays detected in the JUROGAM array were identified by coincidence with residues and α particles in the GREAT spectrometer which consists of a proportional counter, two DSSDs and pin DIODES upstream of the DSSDs.

2005Pa42 and 2005Pa69 present the same experimental work.

2007Pa05 used the same setup with 42 Compton-suppressed Ge detectors and have much better statistics than the other works. Angular distribution information (A_2/A_0, R) are given for the stronger peaks. In addition they give relative B(E2) values and mean field calculations.

2006Gr16 combined the Koln plunger device with the JUROGAM, RITU, and GREAT spectrometer described above.

All data are from 2007Pa05 unless otherwise stated.

^{186}Pb Levels

E(level)‡	J$^\pi$†	$T_{1/2}$#	Comments
0.0	0^+		
662.15@ *19*	2^+	12.5 ps *35*	$T_{1/2}$: From τ=18 ps *5*.
922.74@ *21*	4^+	12.5 ps *28*	$T_{1/2}$: From τ=18 ps *4*.
945.31& *25*	(2^+)		
1259.83@ *23*	6^+	4.2 ps *14*	$T_{1/2}$: From τ=6 ps *2*.
1307.1b *6*	(3^+)		
1336.9& *3*	(4^+)		
1643.3b *16*	(5^+)		
1674.65@ *25*	8^+	3.5 ps *14*	$T_{1/2}$: From τ=5 ps *2*.
1738.2& *4*	(6^+)		
2048.6b *16*	(7^+)		
2160.5@ *5*	10^+		
2162.3& *4*	(8^+)		
2286.9a *21*	(7^-)		
2518.1b *17*	(9^+)		
2592.7a *4*	(9^-)		J$^\pi$: Level tentatively assigned with $J^\pi = 9^-$ by angular distribution information for the 918 keV transition. The angular distribution also allows an $J^\pi = 8^+$ assignment, which is unlikely due to the non-observation of the E2(8^+ to 6^+) transition.
2625.0& *5*	(10^+)		
2710.1@ *8*	(12^+)		
2866.0 *7*			
2961.8a *5*	(11^-)		
3045.1b *19*	(11^+)		
3132.6& *6*	(12^+)		
3315.7@ *11*	(14^+)		
3381.3a *6*	(13^-)		
3409.0 *7*			
3683.9& *11*	(14^+)		
3842.5a *9*	(15^-)		
3967.9@ *12*	(16^+)		

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^{106}Pd(^{83}Kr,3nγ) 2007Pa05,2006Gr16,2005Pa69 (continued)

^{186}Pb Levels (continued)

E(level)[‡]	J$^{\pi}$[†]
4341.1?[a] *11*	(17$^-$)
4635.9?[@] *24*	(18$^+$)
5303.9?[@] *26*	(20$^+$)

[†] Proposed by 2007Pa05 based on γ-ray angular distribution measurements and band assignment.
[‡] From a least-squares fit to Eγ's.
[#] From mean lifetime by recoil distance Doppler-shift (RDDS) method (2006Gr16). Mean lifetime values are listed in comments section.
[@] Band(A): Band I. Prolate band (1993Ba52,2001An07,2007Pa05).
[&] Band(B): Band II. Oblate band (2007Pa05).
[a] Band(C): Band III. Candidate for an octupole band (2007Pa05).
[b] Band(D): Band IV. Possible gamma band (2007Pa05).

γ(^{186}Pb)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	Comments
260.6 *1*	79 *8*	922.74	4$^+$	662.15	2$^+$	Q	A$_2$=−0.08 *4* R=0.9 *2*.
306[#] *2*	<0.5	2592.7	(9$^-$)	2286.9	(7$^-$)		
307[#] *2*	<0.6	1643.3	(5$^+$)	1336.9	(4$^+$)		
337[#] *1*	<0.7	1643.3	(5$^+$)	1307.1	(3$^+$)		
337.1 *1*	74 *7*	1259.83	6$^+$	922.74	4$^+$	Q	A$_2$=−0.02 *3* R=1.1 *2*.
361.8 *5*	0.9 *4*	1307.1	(3$^+$)	945.31	(2$^+$)		
369.1 *4*	0.9 *3*	2961.8	(11$^-$)	2592.7	(9$^-$)		
384[‡#] *4*	1.1[‡] *5*	1307.1	(3$^+$)	922.74	4$^+$		
384[‡#] *4*	1.1[‡] *5*	1643.3	(5$^+$)	1259.83	6$^+$		
391.5 *2*	4.0 *7*	1336.9	(4$^+$)	945.31	(2$^+$)	Q	A$_2$=−0.1 *2* R=0.9 *4*.
401.3 *2*	5.5 *7*	1738.2	(6$^+$)	1336.9	(4$^+$)	Q	R=1.1 *3*.
405.3 *6*	0.7 *3*	2048.6	(7$^+$)	1643.3	(5$^+$)		
414.5 *5*	2.1 *7*	1336.9	(4$^+$)	922.74	4$^+$		
414.8 *1*	56 *5*	1674.65	8$^+$	1259.83	6$^+$		
419.5 *3*	0.4 *3*	3381.3	(13$^-$)	2961.8	(11$^-$)		
424.1 *2*	4.2 *5*	2162.3	(8$^+$)	1738.2	(6$^+$)	Q	A$_2$=+0.15 *5* R=1.5 *10*.
461.3 *7*	1.1 *3*	3842.5	(15$^-$)	3381.3	(13$^-$)		
462.7 *2*	3.9 *5*	2625.0	(10$^+$)	2162.3	(8$^+$)		
469.5 *4*	1.6 *4*	2518.1	(9$^+$)	2048.6	(7$^+$)		
478.8 *2*	3.8 *5*	1738.2	(6$^+$)	1259.83	6$^+$	D	A$_2$=−0.2 *2* R=0.6 *3*.
485.8 *5*	28 *3*	2160.5	10$^+$	1674.65	8$^+$	Q	A$_2$=+0.08 *7* R=1.4 *4*.
487.4 *4*	2.3 *6*	2162.3	(8$^+$)	1674.65	8$^+$		
498.4[#] *7*	<0.2	4341.1?	(17$^-$)	3842.5	(15$^-$)		
507.6 *3*	1.8 *3*	3132.6	(12$^+$)	2625.0	(10$^+$)		
527 *1*	<0.4	3045.1	(11$^+$)	2518.1	(9$^+$)		
543 *1*	<0.3	3409.0		2866.0			

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^{106}Pd(^{83}Kr,3nγ) 2007Pa05,2006Gr16,2005Pa69 (continued)

$\gamma(^{186}Pb)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
549.6 *6*	13.4 *9*	2710.1	(12^+)	2160.5	10^+	Q	A_2=+0.16 *9* R=1.3 *4*.
551.3 *9*	0.5 *3*	3683.9	(14^+)	3132.6	(12^+)		
605.6 *8*	7.1 *5*	3315.7	(14^+)	2710.1	(12^+)		
645[#] *1*	<0.5	1307.1	(3^+)	662.15	2^+		
652.2 *5*	2.2 *2*	3967.9	(16^+)	3315.7	(14^+)		
662.2 *2*	100 *6*	662.15	2^+	0.0	0^+	Q	A_2=−0.04 *2* R=1.0 *2*.
668[#] *2*	<1.0	4635.9?	(18^+)	3967.9	(16^+)		
673[#] *1*	<0.5	5303.9?	(20^+)	4635.9?	(18^+)		
674.5 *6*	1.4 *5*	1336.9	(4^+)	662.15	2^+		A_2=+0.05 *13*
705.5 *4*	<0.3	2866.0		2160.5	10^+		
720 *2*	1.9 *6*	1643.3	(5^+)	922.74	4^+		A_2=−0.07 *15*
[x]750 *3*	<0.3						
[x]770 *3*	<0.3						
790 *4*	0.9 *4*	2048.6	(7^+)	1259.83	6^+		
801.2 *5*	1.0 *3*	2961.8	(11^-)	2160.5	10^+		
[x]837 *2*	<0.4						
844 *3*	<0.3	2518.1	(9^+)	1674.65	8^+		
[x]867 *3*	<0.4						
918.1 *3*	1.2 *4*	2592.7	(9^-)	1674.65	8^+		A_2=−0.3 *2*
945.2 *3*	5.1 *6*	945.31	(2^+)	0.0	0^+	Q	A_2=0.0 *2* R=1.0 *4*.
1027 *2*	1.0 *5*	2286.9	(7^-)	1259.83	6^+		A_2=−0.2 *3*
[x]1043 *3*	<0.3						
[x]1112 *3*	<0.5						
[x]1207 *4*	<1.0						A_2=−0.1 *3*

[†] Assigned by evaluators based on R=Iγ(detectors at 157.60°)/Iγ(detectors at 94.16°+85.84°), where Iγ=α tagged single γ-ray intensity. For ΔJ=2, stretched quadrupole, R is 1.2 *2*; for ΔJ=1, dipole, R=0.6 *2*.

[‡] Multiply placed with undivided intensity.

[#] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

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Legend

Level Scheme

Intensities: Relative I_γ

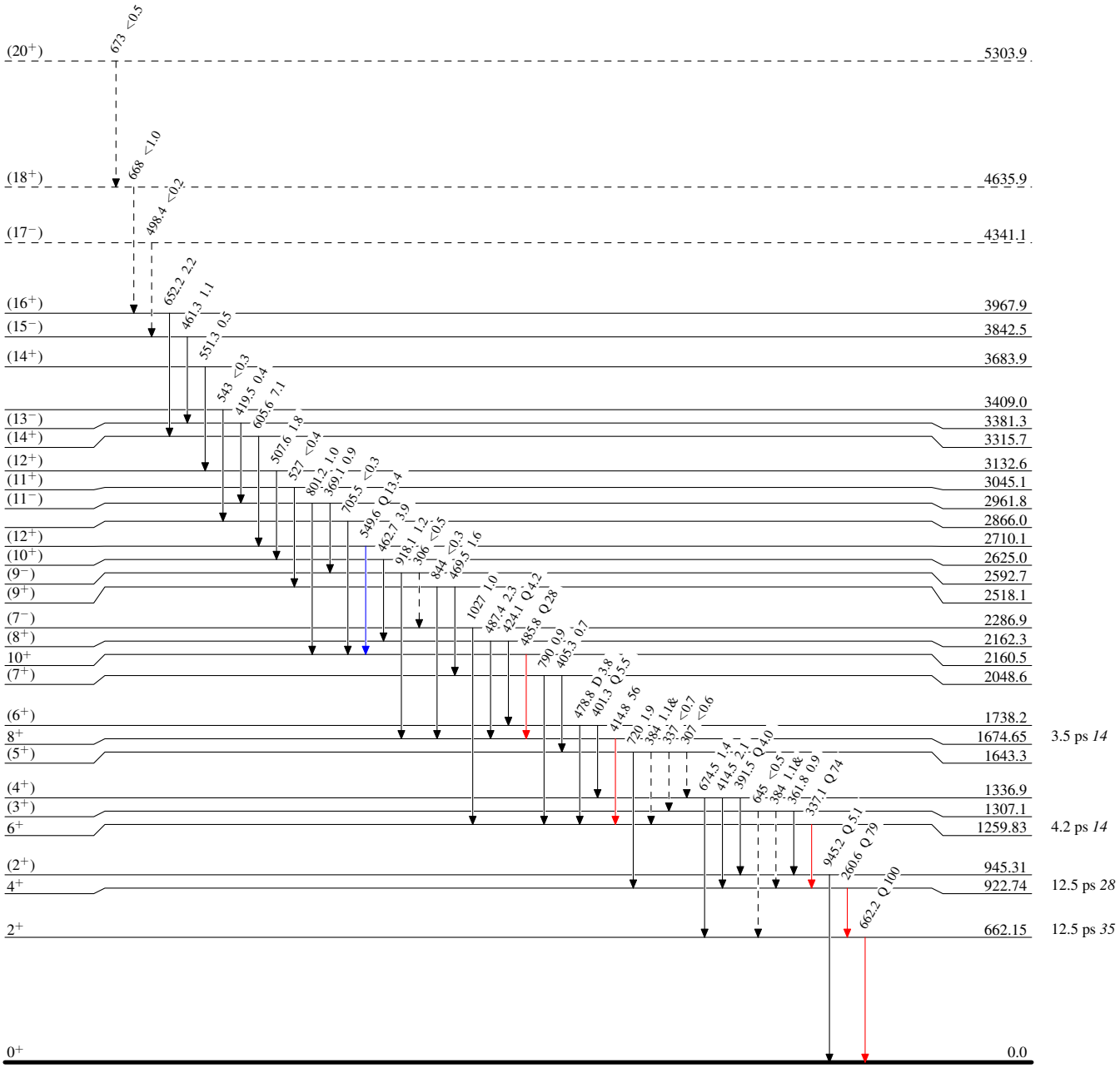
& Multiply placed: undivided intensity given

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



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

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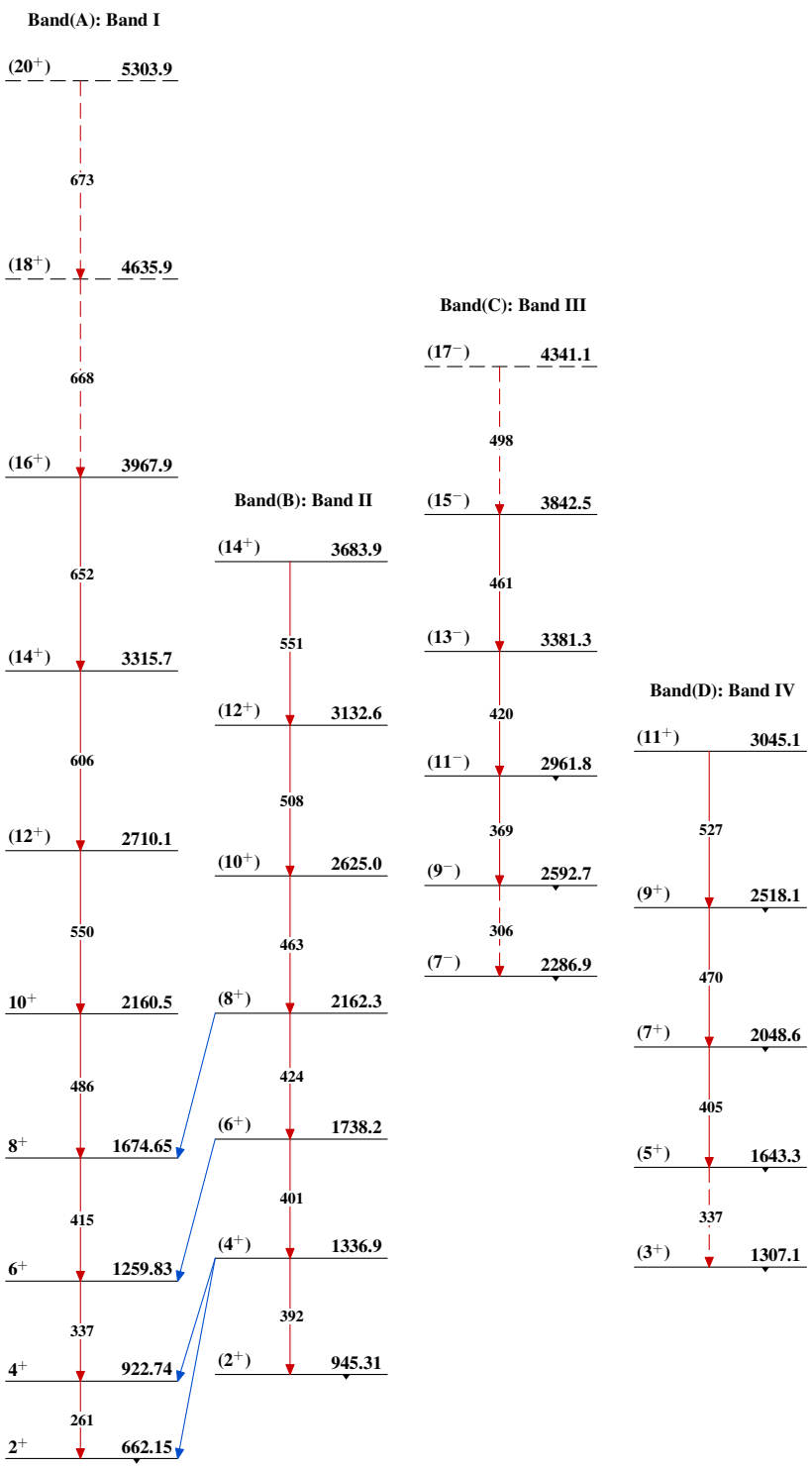

$^{186}_{82}Pb_{104}$