^{205}Pb(n,γ) E=thermal 1996Ra16

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

Target: 78.9% radioactive enriched ^{205}Pb. Measured Eγ, Iγ for primary and secondary γ rays. Determined S(n)=8086.67 keV *6* and thermal-neutron-capture cross section of 4.5 barn 2 for ^{205}Pb. Detectors: Ge(Li) operated as a Compton-suppression or a pair spectrometer.

^{206}Pb Levels

E(level)†	Jπ‡	Comments
0.0	0^+	
803.045 *23*	2^+	
1166.5 *4*	0^+	
1340.47 *4*	3^+	
1466.807 *24*	2^+	
1683.98 *6*	4^+	
1704.45 *3*	1^+	
1784.10 *5*	2^+	
1997.65 *5*	4^+	
2148.93 *6*	2^+	
2197.3 *5*	$(3)^+$	
2236.49 *13*		
2423.36 *4*	2^+	
2647.0 *6*	3^-	
2929.06 *8*	4^+	
3122.34 *16*	(3^+)	
3194.29 *25*	(1,2)#	
3453.4 *7*	4^+	
3484.8 *4*		
3518.5 *7*	(4^+)	
3606.28 *25*	2^+	
4000.7 *8*		
4115.9 *6*	2^+	
8086.67 *6*	2^-,3^-	Additional information 1. E(level): From 1996Ra16 and includes the uncertainty from calibration Eγ's. Jπ: Neutron capture on $J^\pi=5/2^-$ state in ^{205}Pb.

† From a least-squares fit to Eγ, unless otherwise stated.
‡ From Adopted Levels, unless otherwise stated.
# From 3194γ to 0^+.

γ(^{206}Pb)

E_γ†	I_γ#@	E_i(level)	J_i^π	E_f	J_f^π	E_γ†	I_γ#@	E_i(level)	J_i^π	E_f	J_f^π
126.42 *6*	53 *5*	1466.807	2^+	1340.47	3^+	718.92 *5*	148 *6*	2423.36	2^+	1704.45	1^+
313.67 *10*	39 *4*	1997.65	4^+	1683.98	4^+	803.04 *3*	3424 *33*	803.045	2^+	0.0	0^+
317.52 *14*	32 *4*	1784.10	2^+	1466.807	2^+	808.58 *17*	28 *4*	2148.93	2^+	1340.47	3^+
343.55 *14*	37 *5*	1683.98	4^+	1340.47	3^+	856.6 *6*	17 *5*	2197.3	$(3)^+$	1340.47	3^+
537.48 *4*	793 *9*	1340.47	3^+	803.045	2^+	880.92 *7*	105 *6*	1683.98	4^+	803.045	2^+
617.6 *4*	15 *4*	1784.10	2^+	1166.5	0^+	956.56 *11*	63 *5*	2423.36	2^+	1466.807	2^+
639.0 *4*	15 *4*	2423.36	2^+	1784.10	2^+	980.99 *5*	137 *6*	1784.10	2^+	803.045	2^+
657.20 *4*	170 *5*	1997.65	4^+	1340.47	3^+	1082.7 *3*	26 *5*	2423.36	2^+	1340.47	3^+
663.75 *3*	1413 *15*	1466.807	2^+	803.045	2^+	1166.4‡ *5*		1166.5	0^+	0.0	0^+
682.29 *19*	28 *4*	2148.93	2^+	1466.807	2^+	1194.3 *4*	23 *5*	1997.65	4^+	803.045	2^+

Continued on next page (footnotes at end of table)

^{205}Pb(n,γ) E=thermal 1996Ra16 (continued)

$\gamma(^{206}Pb)$ (continued)

E_γ [†]	I_γ [#@]	E_i(level)	J_i^π	E_f	J_f^π
1345.88 *7*	137 *7*	2148.93	2^+	803.045	2^+
1393.8 *8*	15 *5*	2197.3	$(3)^+$	803.045	2^+
1433.47 *13*	79 *6*	2236.49		803.045	2^+
1466.78 *4*	429 *10*	1466.807	2^+	0.0	0^+
1588.59 *8*	210 *8*	2929.06	4^+	1340.47	3^+
1620.30 *6*	305 *11*	2423.36	2^+	803.045	2^+
1655.5 *6*	16 *4*	3122.34	(3^+)	1466.807	2^+
1699.5 *9*	15 *4*	3484.8		1784.10	2^+
1704.45 *3*	521 *11*	1704.45	1^+	0.0	0^+
1764.2 *7*	14 *5*	4000.7		2236.49	
1822.1 *3*	53 *7*	3606.28	2^+	1784.10	2^+
1843.9 *6*	25 *6*	2647.0	3^-	803.045	2^+
2319.32 *17*	58 *6*	3122.34	(3^+)	803.045	2^+
2391.0 *4*	17 *4*	3194.29	(1,2)	803.045	2^+
2650.3 *7*	15 *4*	3453.4	4^+	803.045	2^+
2682.0 *4*	28 *5*	3484.8		803.045	2^+
3194.6 *5*	26 *5*	3194.29	(1,2)	0.0	0^+
4115.9 *6*	27 *7*	4115.9	2^+	0.0	0^+
4480.2 *4*	87 *11*	8086.67	$2^-,3^-$	3606.28	2^+
4568.1 *7*	23 *6*	8086.67	$2^-,3^-$	3518.5	(4^+)
4602.2 *9*	17 *6*	8086.67	$2^-,3^-$	3484.8	
4892.3 *4*	71 *10*	8086.67	$2^-,3^-$	3194.29	(1,2)
4964.6 *5*	85 *19*	8086.67	$2^-,3^-$	3122.34	(3^+)
5157.59 *19*	178 *14*	8086.67	$2^-,3^-$	2929.06	4^+
5663.25 *7*	521 *17*	8086.67	$2^-,3^-$	2423.36	2^+
5850.5 *5*	34 *5*	8086.67	$2^-,3^-$	2236.49	
5888.1 *9*	11 *3*	8086.67	$2^-,3^-$	2197.3	$(3)^+$
5937.81 *14*	171 *10*	8086.67	$2^-,3^-$	2148.93	2^+
6089.09 *15*	199 *11*	8086.67	$2^-,3^-$	1997.65	4^+
6302.09 *21*	99 *8*	8086.67	$2^-,3^-$	1784.10	2^+
6382.06 *11*	351 *15*	8086.67	$2^-,3^-$	1704.45	1^+
6402.3 *7*	28 *5*	8086.67	$2^-,3^-$	1683.98	4^+
6619.70 *5*	1885 *40*	8086.67	$2^-,3^-$	1466.807	2^+
6746.0 *9*	22 *5*	8086.67	$2^-,3^-$	1340.47	3^+
7283.4 *3*	122 *9*	8086.67	$2^-,3^-$	803.045	2^+

[†] From 1996Ra16, relative to 511.000 keV *2* for annihilation radiation, and based on the neutron separation energies of 2224.570 keV *4*, 4946.312 keV *30*, and 6257.246 keV *9* for ^{2}H, ^{13}C, and ^{3}H, respectively.

[‡] From adopted gammas.

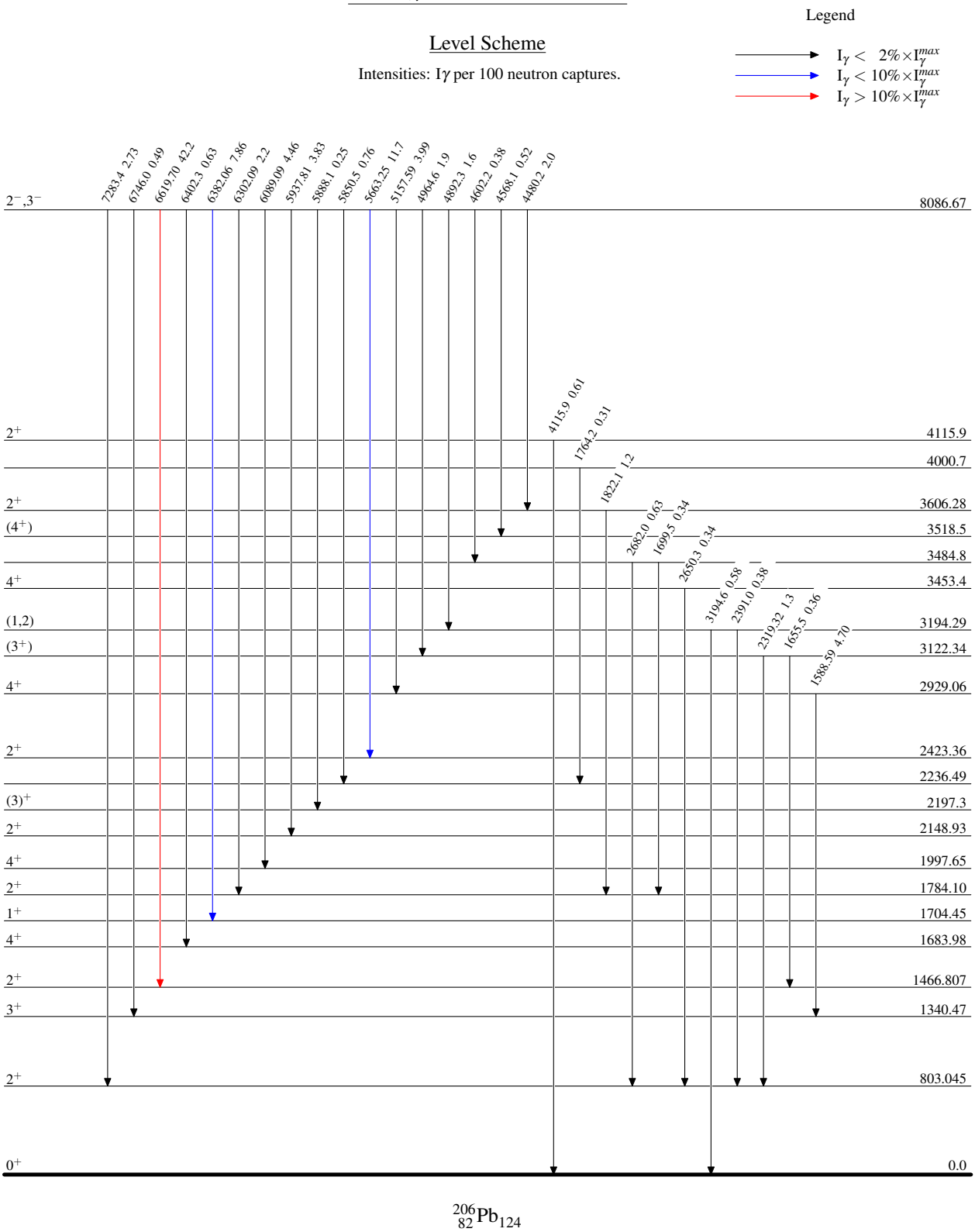
[#] Primary and secondary γ-ray intensities are on the same scale, per 100 neutron captures.

[@] For intensity per 100 neutron captures, multiply by 0.0224.

^{205}Pb(n,γ) E=thermal 1996Ra16

Level Scheme

Intensities: Iγ per 100 neutron captures.

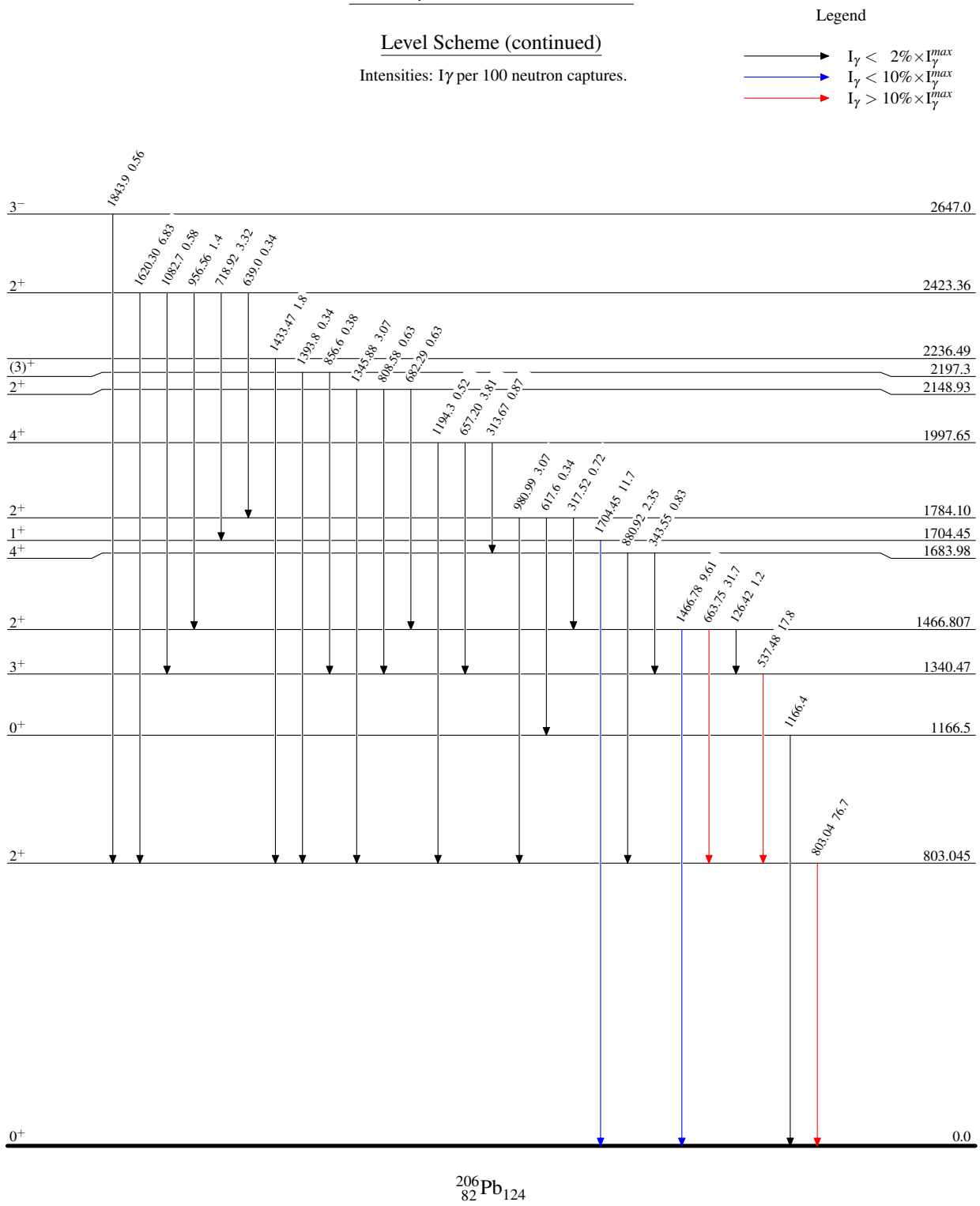


$^{206}_{82}Pb_{124}$

^{205}Pb(n,γ) E=thermal 1996Ra16

Level Scheme (continued)

Intensities: Iγ per 100 neutron captures.



$^{206}_{82}Pb_{124}$