

$^{206}\text{Pb}(\text{d},\text{p}\gamma)$ **1997Ra17**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Lalkovski		NDS 112, 707 (2011)	1-Aug-2010

1997Ra17: Facility: Univ. of Cologne Tandem; Beam: E=10 MeV; Target: 190 mg/cm² enriched to 99.76% in ^{206}Pb with a 140 mg/cm² natural Bi backing; Detectors: OSIRIS Cube spectrometer comprising five HPGe detectors and one EUROBALL Cluster detector placed at 90° with respect to the beam axis, BGO anti-Compton shielded; Measured: $\gamma\gamma$, E γ , I γ .

Others: **1970Ba03,1968VaZX**: Facility: Chalk River Tandem; Beam E(d)=10-12 MeV, I_c=20 nA; Target: self supporting natural and radiogenic lead ($\approx 88\%$ of ^{206}Pb); Detectors: NaI with FWHM=5.5% for 2.6 MeV gammas, Si(Li) with FWHM=1.5% for 13 MeV protons, passive shielding; Measured: γ -P-coin., E γ , E(p).

 ^{207}Pb Levels

E(level) [†]	J π [‡]	I, rel. units [@]	E(level) [†]	J π [‡]	I, rel. units [@]
0.0	1/2 ⁻		4388.65 7	5/2 ⁺	749 23
569.75 5	5/2 ⁻	&	4514.99 21	3/2 ⁺ , 5/2 ⁺	3 1
897.86 5	3/2 ⁻	&	4539.57 8	1/2 ⁺	68 2
1633.39 9	13/2 ⁺	&	4581.78 17	5/2 ⁺	42 2
2339.91 8	7/2 ⁻	12 7	4612.80 14	(5/2 ⁺)	78 3
2623.89 7	5/2 ⁺	&	4627.53 8	1/2 ⁺	1000 47
2662.85 7	7/2 ⁺	9 3	4669.89 21	3/2 ⁻ , 5/2 ⁻	9 1
2728.04 7	9/2 ⁺	187 12	4832.95 21	3/2 ⁺ , 5/2 ⁺	32 1
3181.68 14		9 1	4871.36 20	(1/2, 3/2)	41 2
3202.79 9		6 2	5129.47 9	(3/2 ⁺)	97 4
3384.11 13	9/2 ⁺ , 11/2 ⁺	19 1	5180.10 8	7/2 ⁺	159 5
3415.25 7	9/2 ⁻	3 2	5205.35 12	(7/2 ⁺) [#]	17 1
3476.41 13	(9/2 ⁺)	8 1	5217.62 9	3/2 ⁺	684 31
3524.07 18		11 1	5310.03 15	(7/2 ⁺)	29 1
3634.59 7	5/2 ⁺	130 5	5337.3 5	5/2 ⁺ , 7/2 ⁺	1 1
3711.25 21	(9/2 ⁺)	5 2	5429.51 21	5/2 ⁻	25 1
3877.09 11	(3/2 ⁺ , 5/2 ⁺)	38 1	5502.01 21	5/2 ⁻	15 1
3887.74 19		9 1	5573.19 19	5/2 ⁺ , 7/2 ⁺	28 1
3999.1 3	(5/2 ⁺)	11 1	5824.6 3		9 1
4088.43 21		3 1	6106.63 21	(5/2 ⁺ , 7/2 ⁺)	10 1
4116.22 15	3/2 ⁻	70 3	6214.0 3		17 3
4318.67 6	5/2 ⁺	200 5			

[†] From least-squares fit to E γ .

[‡] From **1997Ra17**, based on the Adopted Levels in **1993Ma73**.

[#] From **1997Ra17**.

[@] Relative level population in $^{206}\text{Pb}(\text{d},\text{p}\gamma)$ from **1997Ra17**.

& State not populated directly in $^{206}\text{Pb}(\text{d},\text{p}\gamma)$ (**1997Ra17**).

 $\gamma(^{207}\text{Pb})$

E γ [†]	I γ [†]	E _i (level)	J π _i [‡]	E _f	J π _f [‡]	E γ [†]	I γ [†]	E _i (level)	J π _i [‡]	E _f	J π _f [‡]
299 1	<0.4	4388.65	5/2 ⁺	4088.43		751.2 1	32 2	3415.25	9/2 ⁻	2662.85	7/2 ⁺
328.4 1	1 1	897.86	3/2 ⁻	569.75	5/2 ⁻	791.9 1	100 5	3415.25	9/2 ⁻	2623.89	5/2 ⁺
388.1 1	16 1	2728.04	9/2 ⁺	2339.91	7/2 ⁻	861.6 [‡] 5	100 [‡] 30	3524.07		2662.85	7/2 ⁺
569.8 1	100	569.75	5/2 ⁻	0.0	1/2 ⁻	863.7 [‡] 5	3 [‡] 1	4388.65	5/2 ⁺	3524.07	
608 [‡] 1	<9 [‡]	4318.67	5/2 ⁺	3711.25	(9/2 ⁺)	897.9 1	100 5	897.86	3/2 ⁻	0.0	1/2 ⁻
684.2 1	22 1	4318.67	5/2 ⁺	3634.59	5/2 ⁺	902.6 1	40 2	4318.67	5/2 ⁺	3415.25	9/2 ⁻

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$^{206}\text{Pb}(\text{d},\text{p}\gamma)$ **1997Ra17** (continued) $\gamma(^{207}\text{Pb})$ (continued)

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π
973.0 ‡ 2	4 ‡ 1	3634.59	5/2 ⁺	2662.85	7/2 ⁺
973.0 ‡ 3	1 ‡ 1	4388.65	5/2 ⁺	3415.25	9/2 ⁻
1010.3 1	34 2	3634.59	5/2 ⁺	2623.89	5/2 ⁺
1044.2 1	100	3384.11	9/2 ⁺ , 11/2 ⁺	2339.91	7/2 ⁻
1063.7 1	100	1633.39	13/2 ⁺	569.75	5/2 ⁻
1094.7 1	100 5	2728.04	9/2 ⁺	1633.39	13/2 ⁺
1116.0 5	13 1	4318.67	5/2 ⁺	3202.79	
1136.5 1	100	3476.41	(9/2 ⁺)	2339.91	7/2 ⁻
1181.4 3	5 1	5180.10	7/2 ⁺	3999.1	(5/2 ⁺)
1185.9 1	2 1	4388.65	5/2 ⁺	3202.79	
1206.5 5	4 1	4388.65	5/2 ⁺	3181.68	
1376.4 ‡ 5	100 ‡	3999.1	(5/2 ⁺)	2623.89	5/2 ⁺
1379.8 ‡ 5	7 ‡ 1	4581.78	5/2 ⁺	3202.79	
1401.0 5	5 1	4581.78	5/2 ⁺	3181.68	
1409.1 5	2 1	4612.80	(5/2 ⁺)	3202.79	
1440.8 5	5 1	2339.91	7/2 ⁻	897.86	3/2 ⁻
1542.1 3	7 1	5180.10	7/2 ⁺	3634.59	5/2 ⁺
1591.6 ‡ 10	5 ‡ 1	4318.67	5/2 ⁺	2728.04	9/2 ⁺
1629.0 10	89 5	4832.95	3/2 ⁺ , 5/2 ⁺	3202.79	
1660.9 1	13 1	4388.65	5/2 ⁺	2728.04	9/2 ⁺
1726.3 1	100 5	2623.89	5/2 ⁺	897.86	3/2 ⁻
1764.4 ‡ 3	11 ‡ 1	4388.65	5/2 ⁺	2623.89	5/2 ⁺
1770.2 1	100 1	2339.91	7/2 ⁻	569.75	5/2 ⁻
1953.1 ‡ 5	6 ‡ 1	4612.80	(5/2 ⁺)	2662.85	7/2 ⁺
1958.6 ‡ 5	17 ‡ 1	4581.78	5/2 ⁺	2623.89	5/2 ⁺
1978.8 1	97 5	4318.67	5/2 ⁺	2339.91	7/2 ⁻
1987.8 3	9 1	4612.80	(5/2 ⁺)	2623.89	5/2 ⁺
2048.7 3	1 1	4388.65	5/2 ⁺	2339.91	7/2 ⁻
2054.4 1	25 1	2623.89	5/2 ⁺	569.75	5/2 ⁻
2092.9 1	100 5	2662.85	7/2 ⁺	569.75	5/2 ⁻
2158.2 1	4 1	2728.04	9/2 ⁺	569.75	5/2 ⁻
2272 1	<2	4612.80	(5/2 ⁺)	2339.91	7/2 ⁻
2284.0 2	100 5	3181.68		897.86	3/2 ⁻
2303.9 5	78 4	3202.79		897.86	3/2 ⁻
2451.7 1	38 2	5180.10	7/2 ⁺	2728.04	9/2 ⁺
2476.8 5	25 1	5205.35	(7/2 ⁺)	2728.04	9/2 ⁺
2542.5 1	100 5	5205.35	(7/2 ⁺)	2662.85	7/2 ⁺
2556.7 1	10 1	5180.10	7/2 ⁺	2623.89	5/2 ⁺
2581.9 2	22 1	5310.03	(7/2 ⁺)	2728.04	9/2 ⁺
2612.6 ‡ 10	<12 ‡	3181.68		569.75	5/2 ⁻
2633.1 1	100 5	3202.79		569.75	5/2 ⁻
2662.3 1	5 1	2662.85	7/2 ⁺	0.0	1/2 ⁻
2674.4 5	100	5337.3	5/2 ⁺ , 7/2 ⁺	2662.85	7/2 ⁺
2736.6 1	100 5	3634.59	5/2 ⁺	897.86	3/2 ⁻
2845.3 1	100 5	3415.25	9/2 ⁻	569.75	5/2 ⁻
2954.1 2	56 3	3524.07		569.75	5/2 ⁻
2979.7 1	100 5	3877.09	(3/2 ⁺ , 5/2 ⁺)	897.86	3/2 ⁻
3064.6 2	19 1	3634.59	5/2 ⁺	569.75	5/2 ⁻
3141.5 2	100	3711.25	(9/2 ⁺)	569.75	5/2 ⁻
3181.5 2	34 7	3181.68		0.0	1/2 ⁻
3218.1 2	7 1	4116.22	3/2 ⁻	897.86	3/2 ⁻
3303.4 3	60 3	3877.09	(3/2 ⁺ , 5/2 ⁺)	569.75	5/2 ⁻
3317.9 2	100 5	3887.74		569.75	5/2 ⁻

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$^{206}\text{Pb}(\text{d},\text{p}\gamma)$ **1997Ra17** (continued) $\gamma(^{207}\text{Pb})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
3420.5 1	67 3	4318.67	5/2 ⁺	897.86	3/2 ⁻
3490.7 1	100 5	4388.65	5/2 ⁺	897.86	3/2 ⁻
3518.6 2	100	4088.43		569.75	5/2 ⁻
3641.8 1	79 4	4539.57	1/2 ⁺	897.86	3/2 ⁻
3683.5 2	100 5	4581.78	5/2 ⁺	897.86	3/2 ⁻
3729.7 1	8 1	4627.53	1/2 ⁺	897.86	3/2 ⁻
3748.7 1	100 5	4318.67	5/2 ⁺	569.75	5/2 ⁻
3818.8 1	28 1	4388.65	5/2 ⁺	569.75	5/2 ⁻
3875.7 5	17 3	3877.09	(3/2 ⁺ , 5/2 ⁺)	0.0	1/2 ⁻
3888.1 5	88 20	3887.74		0.0	1/2 ⁻
3945.2 2	100	4514.99	3/2 ⁺ , 5/2 ⁺	569.75	5/2 ⁻
4048.0 3	6 1	4612.80	(5/2 ⁺)	569.75	5/2 ⁻
4100.1 2	100	4669.89	3/2 ⁻ , 5/2 ⁻	569.75	5/2 ⁻
4116.4 2	100 5	4116.22	3/2 ⁻	0.0	1/2 ⁻
4263.2 2	100 5	4832.95	3/2 ⁺ , 5/2 ⁺	569.75	5/2 ⁻
4319.7 [‡] 1	<22 [‡]	4318.67	5/2 ⁺	0.0	1/2 ⁻
4319.7 [‡] 2	2 [‡] 1	5217.62	3/2 ⁺	897.86	3/2 ⁻
4388.3 2	7 2	4388.65	5/2 ⁺	0.0	1/2 ⁻
4539.4 1	100 20	4539.57	1/2 ⁺	0.0	1/2 ⁻
4559.7 2	66 3	5129.47	(3/2 ⁺)	569.75	5/2 ⁻
4610.7 2	100 20	4612.80	(5/2 ⁺)	0.0	1/2 ⁻
4610.7 2	100 5	5180.10	7/2 ⁺	569.75	5/2 ⁻
4627.4 1	100 20	4627.53	1/2 ⁺	0.0	1/2 ⁻
4647.6 2	7 1	5217.62	3/2 ⁺	569.75	5/2 ⁻
4740.3 2	100 5	5310.03	(7/2 ⁺)	569.75	5/2 ⁻
4859.7 2	100	5429.51	5/2 ⁻	569.75	5/2 ⁻
4871.3 2	100	4871.36	(1/2, 3/2)	0.0	1/2 ⁻
4932.2 2	100	5502.01	5/2 ⁻	569.75	5/2 ⁻
5003.2 2	100 5	5573.19	5/2 ⁺ , 7/2 ⁺	569.75	5/2 ⁻
5129.4 1	100 20	5129.47	(3/2 ⁺)	0.0	1/2 ⁻
5180.3 2	32 6	5180.10	7/2 ⁺	0.0	1/2 ⁻
5217.6 1	100 20	5217.62	3/2 ⁺	0.0	1/2 ⁻
5254.8 3	100	5824.6		569.75	5/2 ⁻
5316.1 3	100 5	6214.0		897.86	3/2 ⁻
5536.8 2	100	6106.63	(5/2 ⁺ , 7/2 ⁺)	569.75	5/2 ⁻
5574.2 5	12 1	5573.19	5/2 ⁺ , 7/2 ⁺	0.0	1/2 ⁻
5824.1 10		5824.6		0.0	1/2 ⁻
6213.8 10	17 3	6214.0		0.0	1/2 ⁻

[†] From **1997Ra17**.[‡] Unresolved line. Tentative E_γ and I_γ assignments are given in **1997Ra17**.

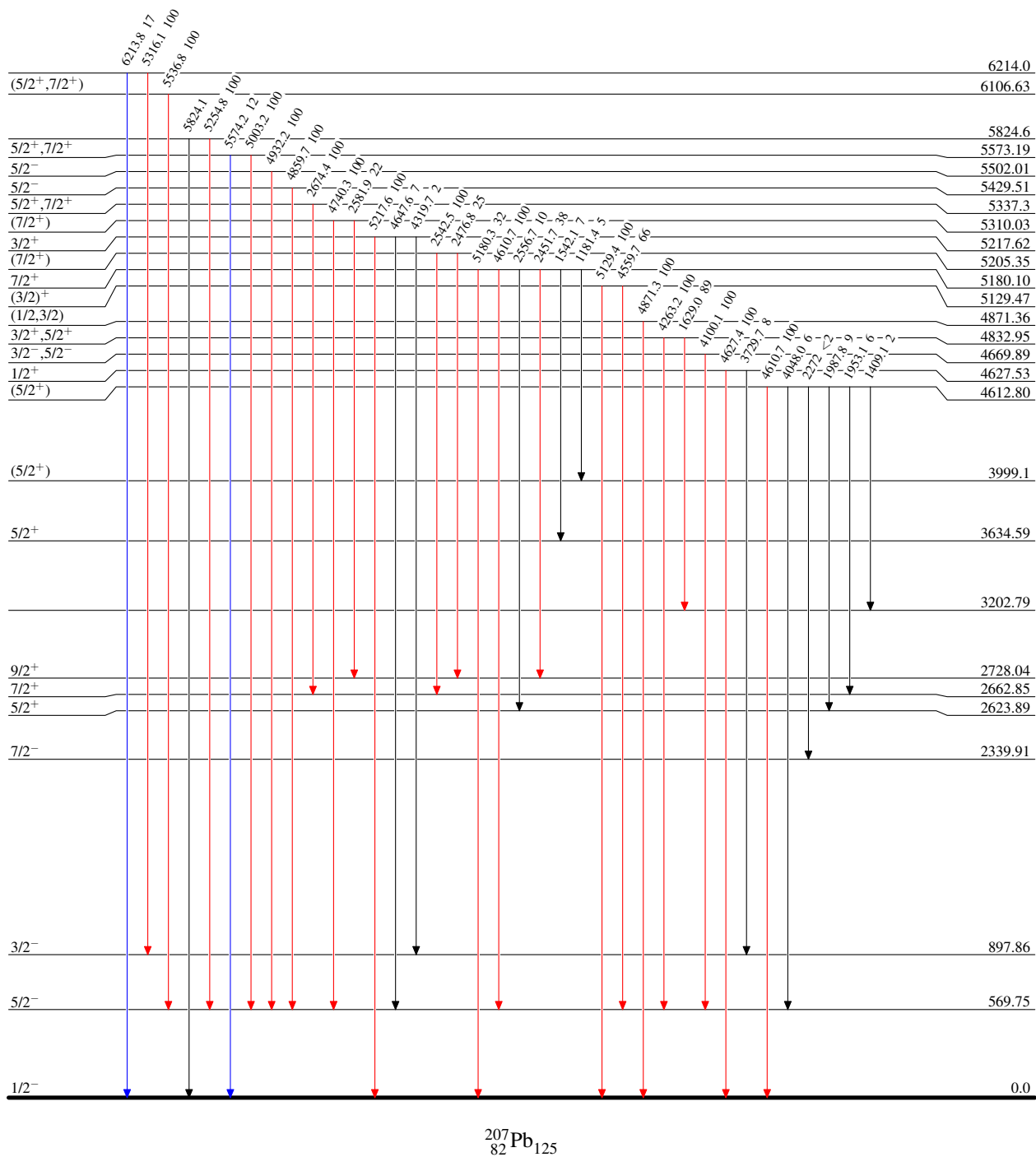
$^{206}\text{Pb}(\text{d},\text{p}\gamma)$ 1997Ra17

Level Scheme

Intensities: Type not specified

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{207}_{82}\text{Pb}_{125}$

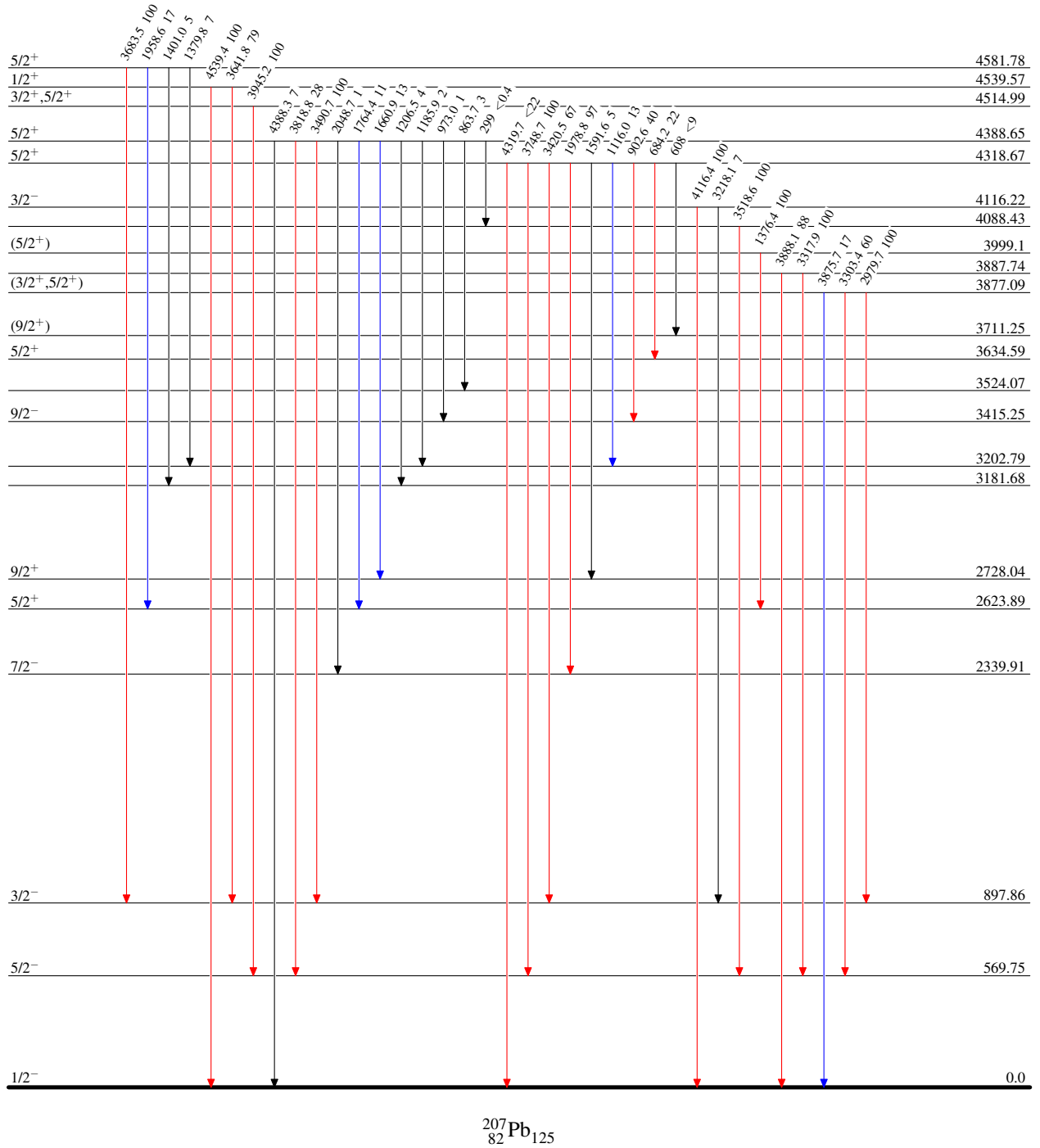
$^{206}\text{Pb}(\text{d},\text{p}\gamma)$ 1997Ra17

Level Scheme (continued)

Intensities: Type not specified

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$



$^{206}\text{Pb}(\text{d},\text{p}\gamma)$ 1997Ra17

Level Scheme (continued)

Intensities: Type not specified

Legend

- $\rightarrow$ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
 $\rightarrow$ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
 $\rightarrow$ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

