

$^{207}\text{Pb}(\text{d,p}),(\text{pol d,p})$

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

$J^\pi(\text{target})=1/2^-$.

1973Vo11 E=18 MeV, FWHM=18 keV.

1997VaZT see 2001Va04.

2001Va04 E(d), E(pol d)=22 MeV, FWHM=5-6 keV.

2006He21 E=22 MeV, FWHM=3 keV.

2007He01 E=22 MeV, FWHM=3 keV.

Others: 1962Mu05, 1967Ba41, 1968Do04.

 ^{208}Pb Levels

configuration: the (d,p) reaction on ^{207}Pb ($J^\pi=1/2^-$) is expected to populate states in ^{208}Pb with configuration= $\nu\text{nlj}\nu 3p_{1/2}^{-1}\text{J}$, where the states nlj are in the shell $126 < n < 184$ and consist of $\nu 2g_{9/2}$, $\nu 1i_{11/2}$, $\nu 1j_{15/2}$, $\nu 3d_{5/2}$, $\nu 4s_{1/2}$, $\nu 2g_{7/2}$, and $\nu 3d_{3/2}$. The configurations for the neutron particle states, As determined from L and analyzing power measurements of 1997VaZT and 2001Va04, are given In comments.

E(level) [†]	L [@]	S [@]	Comments
0.0			
2614.7 2	4	0.2	
3197.4 17	4	4.5	
3475.1 14	4	4.1	
3708.4 22	4	0.9	
3996 2			L,S: 1973Vo11 report L=(6) with S=0.9; however, L is not consistent with the adopted J^π of 4^- .
4049 2			L,S: 1973Vo11 report L=(6) with S=0.65; however, L is not consistent with the adopted J^π of 3^- .
4125.2 7	4+6	0.135+2.4	configuration= $\nu 2g_{9/2} + \nu 1i_{11/2}$.
4180.6 7	6	3.02	configuration= $\nu 1i_{11/2}$.
4205.2 7	6	6.36	configuration= $\nu 1i_{11/2}$.
4229.9 7	2	0.123	L: 1973Vo11 report L=4 with S=0.4 for E=4220. This is probably the same level As the 4230 reported by 2001Va04; however, 2001Va04 report L=2, and the adopted J^π is 2^- .
4255.6 15	2	0.032	configuration= $\nu 3d_{5/2}$.
4262.4 15	4	0.020	configuration= $\nu 3d_{5/2}$.
4296.6 7	6	0.93	L,S: 1973Vo11 report L=4 or 2 with corresponding S=0.1 and 0.03. The adopted J^π is 5^- .
4358.8 7	4	0.105	configuration= $\nu 1i_{11/2}$.
4382.0 7	6	0.26	configuration= $\nu 2g_{9/2}$.
4425.2 15			configuration= $\nu 1i_{11/2}$.
4480.7 7			
4610.7 [‡] 3	7	5.3	configuration= $\nu 1j_{15/2}$.
4698.40 [‡] 15	2	0.96	E(level): 1997VaZT report 4609.3 7.
4711.0 [‡] 6			E(level): 1997VaZT report 4698.4 3.
4762.1 [‡] 4			E(level): 1997VaZT report 4713 4.
4841.7 [‡] 4	0+2		E(level): 1997VaZT report 4761.5 3.
4860.8 [‡] 3	7	2.65	L: from 2007He01, L=2/L=0>0.5.
4868.1 [‡] 2	7	7.50	configuration= $\nu 1j_{15/2}$.
4879 2			E(level): 1997VaZT report 4859.8 15.
			configuration= $\nu 1j_{15/2}$.
			E(level): 1997VaZT report 4868.1 15.

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$^{207}\text{Pb}(\text{d,p}),(\text{pol d,p})$ (continued) ^{208}Pb Levels (continued)

E(level) [†]	L [@]	S [@]	Comments
4909.5 3	7	0.44	configuration= $\nu 1j_{15/2}$.
4937.4 [‡] 4	2+4	0.032+0.025	configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$. E(level): 1997VaZT report 4938.6 3.
4953.7 15			
4973.9 [‡] 2	2	1.68	configuration= $\nu 3d_{5/2}$. E(level): 1997VaZT report 4974.1 4.
4992.5 [‡] 6	2	0.020	configuration= $\nu 3d_{5/2}$. E(level): 1997VaZT report 4995.6 20.
5037.4 [‡] 2	2	1.47	configuration= $\nu 3d_{5/2}$. E(level): 1997VaZT report 5037.4 4.
5056.1 [‡] 3			E(level): not reported by 1997VaZT.
5074.8 [‡] 4			E(level): 1997VaZT report 5074.9 15.
5079.8 [‡] 7			E(level): not reported by 1997VaZT.
5093.2 [‡] 5			E(level): 1997VaZT report 5093 2.
5127.4 [‡] 3	2	0.836	configuration= $\nu 3d_{5/2}$. E(level): 1997VaZT report 5127.2 4.
5195.0 [‡] 3	4	0.038	configuration= $\nu 2g_{7/2}$. E(level): 1997VaZT report 5195.1 4.
5214.0 [‡] 3			configuration= $\nu 3d_{5/2}$. E(level): 1997VaZT report 5213.3 4 with L=2 and S=0.050.
5239.5 [#] 8			
5245.4 [#] 3	2	0.858	configuration= $\nu 3d_{5/2}$. E(level): 1997VaZT report 5244.2 20.
5254.2 [#] 8			E(level): not reported by 1997VaZT.
5261.2 [#] 8			E(level): not reported by 1997VaZT.
5266.6 [#] 9			E(level): not reported by 1997VaZT.
5276.3 [#] 4			E(level): 1997VaZT report 5275.3 15.
5280.5 [#] 1	0	0.650	configuration= $\nu 4s_{1/2}$. E(level): 1997VaZT report 5280.9 15.
5287.8 [#] 19			E(level): not reported by 1997VaZT.
5292.2 [#] 1	0	1.55	configuration= $\nu 4s_{1/2}$. E(level): 1997VaZT report 5292.4 15. L: L=2/L=0<0.1 (2007He01).
5307.6 [#] 15			E(level): not reported by 1997VaZT.
5313.0 [#] 10			E(level): not reported by 1997VaZT.
5316.9 [#] 15			E(level): not reported by 1997VaZT.
5326.6 2			E(level): from 2007HeZW. Not reported by 1997VaZT.
5340.0 [#] 9			E(level): not reported by 1997VaZT.
5347.4 [#] 2	2+4	0.018+0.214	L,S: 1973Vo11 report L=0 with S=0.065. The adopted J^π is 3^- . The evaluator notes that $\sigma(\theta)$ of 1973Vo11 would seem to be reproducible by L=2+4, whereas the polarization data of 1997VaZT rule out L=0. configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$. E(level): 1997VaZT report 5346.4 4.
5373.8 8			E(level): from 2007HeZW. Not reported by 1997VaZT.
5384.5 4	2	0.155	configuration= $\nu 3d_{5/2}$. E(level): from 1973Vo11. Not reported by 2001Va04.
5420?			
5482.5 15			
5491.9 6	4	0.066	configuration= $\nu 2g_{7/2}$.
5511.2 6	2	0.165	configuration= $\nu 3d_{3/2}$. L: L=2/L=0>0.8 (2007He01).

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$^{207}\text{Pb}(\text{d,p}),(\text{pol d,p})$ (continued) ^{208}Pb Levels (continued)

E(level) [†]	L [@]	S [@]	Comments
5518.0 15 5533 3	4	0.044	configuration= $\nu 2g_{7/2}$.
5548.5 [#] 4	2	0.011+0.063	configuration= $\nu 3d_{3/2} + \nu 3d_{5/2}$. E(level): 1997VaZT report 5549.9 6.
5557.2 [#] 10			E(level): not reported by 1997VaZT.
5563.9 [#] 3	2+4	0.139+0.087	L,S: 1973Vo11 report L=4, and In 2001Va04 only the L=2 component is shown. In Adopted Levels there is a close-lying level At 5566.0 with unknown J^π . This level could Be contributing to the $\sigma(\theta)$ and analyzing power results of these authors. configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$. E(level): 1997VaZT report 5564.7 6.
5572.0 [#] 8			E(level): not reported by 1997VaZT.
5579.0 [#] 9			E(level): not reported by 1997VaZT.
5587.4 10			E(level): 1997VaZT report 5588 2.
5599.8 [#] 5	0	0.103	configuration= $\nu 4s_{1/2}$. E(level): 1997VaZT report 5598.9 8.
5614.4 [#] 17			E(level): not reported by 1997VaZT.
5640.7 [#] 6			E(level): 1997VaZT report 5640.8 15.
5648.7 [#] 5			E(level): 1997VaZT report 5646 2.
5658.4 15			
5674.9 15			
5688.4 15			
5720.0 8			
5741.7 8			E(level): from 2007HeZW. 1997VaZT report E=5741.0 15.
5777.2 8			L,S: 1973Vo11 report L=4. 1997VaZT report two fits, L=2 with S=0.220+0.033 for $d_{3/2} + d_{5/2}$, and L=2+4 with S=0.015+0.40 for $3d_{5/2} + 2g_{7/2}$. 2001Va04 report only the L=2 result from 1997VaZT. L=2 gives a better fit to the analyzing power data, but L=2 and L=2+4 give equally good fits to $\sigma(\theta)$. In Adopted Levels there is a close-lying level At 5782.0 with unknown J^π that could Be influencing the extraction of L and S. configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$ or $\nu 3d_{3/2} + \nu 3d_{5/2}$. configuration= $\nu 2g_{7/2}$.
5812.2 15	4	0.400	
5822.3 15			
5835.1 17			E(level): from 2007HeZW. Not reported by 1997VaZT.
5872.6 15	4	1.99	configuration= $\nu 2g_{7/2}$.
5883.6 15	2+4	0.070+0.106	configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$.
5924.2 8	2	1.70	configuration= $\nu 3d_{3/2}$.
5946.6 8	2	1.39	configuration= $\nu 3d_{3/2}$. L: L=2/L=0>12 (2007He01).
5968.1 5	4	4.58	configuration= $\nu 2g_{7/2}$.
5989.5 15			
5994 2			
6009.8 5	4	1.02	configuration= $\nu 2g_{7/2}$.
6025.8 15			
6037.3 15	(5)	0.045	configuration= $\nu 2h_{11/2}$.
6067.5 20	(5)	0.029	configuration= $\nu 2h_{11/2}$.
6075.2 15	(0)	0.038	configuration= $\nu 4s_{1/2}$.
6086.4 5	2	0.57	configuration= $\nu 3d_{3/2}$.
6102.9 15	(5)	0.075	configuration= $\nu 2h_{11/2}$.
6180?			E(level): from 1973Vo11. Not reported by 1997VaZT.
6191.7 5	(5)	0.035	configuration= $\nu 2h_{11/2}$.
6243.3 5			
6256.1 15			
6264.7 15	0+2	0.059+0.007	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$. L: L=2/L=0>0.6 (2007He01).
6275.1 15	2+4	0.012+0.014	configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$.

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$^{207}\text{Pb}(\text{d,p}),(\text{pol d,p})$ (continued) ^{208}Pb Levels (continued)

E(level) [†]	L [@]	S [@]	Comments
6305?	2		E(level): reported only by 1973Vo11 .
6316 3	0+2	0.113	configuration= $\nu 4s_{1/2} + \nu 3d_{5/2}$ or $\nu 3d_{3/2}$. L: L=2/L=0>0.7 (2007He01). 1997VaZT report L=0.
6338.6 5			
6353.8 15			
6363.5 15	2	0.013	configuration= $\nu 3d_{3/2}$. L: L=2/L=0>0.7 (2007He01).
6389.6 5	(2,4)	0.013+0.025	configuration= $\nu 3d_{3/2}$ or $\nu 2g_{7/2}$.
6421.6 5	(5)	0.032	configuration= $\nu 2h_{11/2}$.
6444.9 5	(2+4)	0.005+0.013	configuration= $\nu 3d_{5/2} + \nu 2g_{7/2}$.
6463.0 5			
6486.7 5	0+2	0.012+0.038	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$. L: L=2/L=0>0.8 (2007He01).
6552.4 5	2	0.065	configuration= $\nu 3d_{3/2}$.
6573.2 15			
6590 2			
6595.8 7			
6616.9 7	4	0.144	configuration= $\nu 2g_{7/2}$.
6656 2			
6684.7 7	(5)	0.064	configuration= $\nu 2h_{11/2}$.
6698.5 15			
6720.8 15			
6735.6 15			
6767.9 15			
6774.7 15			
6790.6 7			
6801.5 7			
6821 2			
6825.6 7			
6877.5 6			
6927.5 6	2	0.011+0.007	configuration= $\nu 3d_{3/2} + \nu 3d_{5/2}$.
6968.9 6	2	0.072+0.029	configuration= $\nu 3d_{3/2} + \nu 3d_{5/2}$.
7002.9 15			
7020.2 6	0+2	0.038+0.036	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$.
7064.1 6	0	0.065	configuration= $\nu 4s_{1/2}$.
7084 2	2	0.016	configuration= $\nu 3d_{3/2}$.
7119 2			
7136.7 15	(4)	0.053	configuration= $\nu 2g_{7/2}$.
7146.1 15	(5)	0.065	configuration= $\nu 2h_{11/2}$.
7168 2			
7197.9 15			
7219 2			
7233 3			
7239.6 15	(0+2)	0.119+0.041	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$.
7255.3 15			
7279.0 15			
7289.0 15			
7299 2			
7311 2			
7329.2 15			
7335.4 15	(5)	0.115	configuration= $\nu 2h_{11/2}$.
7360.1 15	(5)	0.115	configuration= $\nu 2h_{11/2}$.
7373.3 15			
7398.7 15			
7408.4 15			
7421.0 15			
7430.0 15			

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$^{207}\text{Pb}(\text{d,p}),(\text{pol d,p})$ (continued) ^{208}Pb Levels (continued)

<u>E(level)[†]</u>	<u>L[@]</u>	<u>S[@]</u>	<u>Comments</u>
7450.2 15 7458 2	(5)	0.175	configuration= $\nu 2h_{11/2}$.
7468.5 6	0+2	0.070+0.013	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$.
7505.0 6	0+2	0.108+0.028	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$.
7517 2	(0)	0.119	configuration= $\nu 4s_{1/2}$.
7548.6 6	0+2	0.108+0.028	configuration= $\nu 4s_{1/2} + \nu 3d_{3/2}$.

[†] From [1997VaZT](#), except where noted otherwise.

[‡] From [2006He21](#).

From [2007He01](#).

[@] From [1997VaZT](#), except for the levels below 4100 where the data are from [1973Vo11](#). The spectroscopic factors of [1997VaZT](#) are $(2J+1)C^2S$, where J is the spin of the transferred neutron. [1973Vo11](#) quote values of $(2J+1)C^2S$, where J is the spin of the final level. The two sets of data also differ by the statistical factor $2J(\text{target})+1=2$. The values from [1973Vo11](#) quoted here are the authors' values divided by 2. Some of the S values from [1997VaZT](#) are also given in [2001Va04](#). See also [2007He01](#) for relative σ values for the 1^- and 0^- levels in the range 4841 to 6486.