^{198}Hg(pol d,α) 2004Wi08

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong	NDS 108, 1093 (2007)	1-Jan-2006

E=18 MeV. Measured E(α) with a focal plane detector, which consisted of an array of single-wire proportional detectors with an additional cathode readout structure followed by a plastic scintillator for particle identification. Outgoing α particles were momentum seperated by the Q3D magnetic spectrograph. The spectrograph has a solid angle of acceptance of up to 11 msr. For the extended (pol d,α) experiment, a new focal plane detector, which is usable at higher beam currents, was used. It is a position-sensitive proportional counter with a single-strip readout of a cathode foil and $\Delta E/E_{rest}$ particle identification. The beam was stopped in a Faraday cup, and the current was integrated to enable measurements of absolute differential cross sections. Data were obtained for 8 scattering angles between 10° and 50°. FWHM=8 keV. DWBA analysis performed. $\sigma(\theta)$ and $A_y(\theta)$ plots can be found in the on-line appendix.

^{196}Au Levels

Cross-section measurements were made at 20° to the deuteron beam.

E(level)	J^{π}[‡]	L[†]	Comments
0.0	2^-	1+3	S: 0.0149 for L=1; 0.0181 for L=3. dσ/dΩ=12.8 μb/sr.
41.8 *5*	0^-,1^-	1	S: 0.0144 for L=1, J=0; 0.0086 for L=1, J=1. dσ/dΩ=1.0 μb/sr.
84.5 *4*	5^+	4+6	S: 0.0084 for L=4; 0.0029 for L=6. dσ/dΩ=2.2 μb/sr.
166.6 *5*	2^-	1+3	S: 0.0204 for L=1; 0.0057 for L=3. dσ/dΩ=6.8 μb/sr.
197.6 *7*	(1)	1,0+2	S: 0.0032 for L=1, J=1^-; 0.0022 for L=0, J=1^+; 0.0009 for L=2, J=1^+. dσ/dΩ=0.8 μb/sr.
212.7 *5*	4^-	3+5	S: 0.0012 for L=3; 0.0283 for L=5. dσ/dΩ=3.8 μb/sr.
233.8 *6*	(3^-,5^+)	3,4+6	S: 0.0014 for L=3, J=3^-; 0.0015 for L=4, J=5^+; 0.0030 for L=6, J=5^+. dσ/dΩ=0.5 μb/sr.
253.0 *5*	(2^+)	2	S: 0.0022 for L=2. dσ/dΩ=0.4 μb/sr.
287.2 *10*	(2^-)	1+3	S: 0.0008 for L=1; 0.0005 for L=3. dσ/dΩ=0.5 μb/sr.
307.4 *5*	2^-	1+3	S: 0.0057 for L=1; 0.0016 for L=3. dσ/dΩ=1.6 μb/sr.
324.5 *5*	(1)	1,0+2	S: 0.0026 for L=1, J=1^-; 0.0010 for L=0, J=1^+; 0.0011 for L=2, J=1^+. dσ/dΩ=0.4 μb/sr. J^{π}: 1^-,1^+ in figure 15 of dσ/d$\Omega(\theta)$ within online appendix.
348.6 *5*	5^+	4+6	S: 0.0378 for L=4; 0.0159 for L=6. dσ/dΩ=11.7 μb/sr.
375.3 *5*	(3^-)	3	S: 0.0030 for L=3. dσ/dΩ=1.5 μb/sr.
388.4 *6*	(2^-,3^+)	1,2+4	S: 0.0026 for L=1, J=2^-; 0.0013 for L=2, J=3^+; 0.0008 for L=4, J=3^+. dσ/dΩ=0.4 μb/sr.
404.1 *5*	4^-	5	S: 0.0144 for L=5. dσ/dΩ=1.9 μb/sr.
415.3 *6*	2^-	1+3	S: 0.0066 for L=1; 0.0004 for L=3. dσ/dΩ=1.0 μb/sr.
456.8 *5*	2^-	1+3	S: 0.0051 for L=1; 0.0004 for L=3. dσ/dΩ=0.9 μb/sr.
467.6 *5*	(3^+,4^-)	2+4,3+5	S: 0.0021 for L=2, J=3^+; 0.0081 for L=4, J=3^+; 0.0012 for L=3, J=4^-; 0.0109 for L=5, J=4^-. dσ/dΩ=2.1 μb/sr.

Continued on next page (footnotes at end of table)

^{198}Hg(pol d,α) 2004Wi08 (continued)

^{196}Au Levels (continued)

E(level)	J^{π}‡	L†	Comments
491.1 *5*	2^-	1+3	S: 0.0111 for L=1; 0.0024 for L=3. dσ/dΩ=3.7 μb/sr.
502.3 *6*	(5^+)	4+6	S: 0.0020 for L=4; 0.0117 for L=6. dσ/dΩ=1.7 μb/sr.
518.5 *6*	(2^-)	1+3	S: 0.0010 for L=1; 0.0007 for L=3. dσ/dΩ=0.7 μb/sr.
544.1? *18*			dσ/dΩ=0.1 μb/sr.
569.0 *6*	2^-	1+3	S: 0.0045 for L=1; 0.0010 for L=3. dσ/dΩ=1.6 μb/sr.
587.6 *6*	(2^-)	1+3	S: 0.0040 for L=1; 0.0014 for L=3. dσ/dΩ=1.7 μb/sr.
596.0 *7*	(2)	1+3,2	S: 0.0029 for L=1, J=2^-; 0.0007 for L=3, J=2^-; 0.0040 for L=2, J=2^+. dσ/dΩ=1.1 μb/sr.
638.5 *8*	2^-	1+3	S: 0.0051 for L=1; 0.0018 for L=3. dσ/dΩ=2.2 μb/sr.
651.9 *8*	$(1^+,5^+)$	2,6	S: 0.0025 for L=2, J=1^+; 0.0118 for L=6, J=5^+. dσ/dΩ=0.7 μb/sr.
671.1 *7*	3^-	3	S: 0.0036 for L=3. dσ/dΩ=1.6 μb/sr.
683.5 *9*	4^-	3+5	S: 0.0015 for L=3; 0.0024 for L=5. dσ/dΩ=1.6 μb/sr.
706.1 *8*	3^+	2+4	S: 0.0075 for L=2; 0.0122 for L=4. dσ/dΩ=5.9 μb/sr.
717.2 *9*	(5^+)	4+6	S: 0.0022 for L=4; 0.0179 for L=6. dσ/dΩ=1.8 μb/sr.
734.9 *7*	$(0^-,1^-)$	1	S: 0.0102 for L=1, J=0^-; 0.0060 for L=1, J=1^-. dσ/dΩ=0.8 μb/sr.
749.1 *7*	2^-	1+3	S: 0.014 for L=1; 0.00140 for L=3. dσ/dΩ=4.7 μb/sr.
782.2 *6*	2^-	1+3	S: 0.0010 for L=1; 0.0003 for L=3. dσ/dΩ=0.4 μb/sr. J^{π}: (2^-) in figure 15 of dσ/dΩ(θ) plot in online appendix.
799.4 *7*	4^-	3+5	S: 0.0044 for L=3; 0.0014 for L=5. dσ/dΩ=4.2 μb/sr.
816.3 *6*	(2^-)	1+3	S: 0.0017 for L=1; 0.0008 for L=3. dσ/dΩ=1.0 μb/sr.
851.8 *8*	$(3^-,4^-)$	3,3+5	S: 0.0070 for L=3, J=3^-; 0.0031 for L=3, J=4^-; 0.0093 for L=5, J=4^-. dσ/dΩ=3.8 μb/sr.
882.7 *8*	$(4^-,5^-)$	3+5,5	S: 0.0020 for L=3, J=4^-; 0.0161 for L=5, J=4^-; 0.0262 for L=5, J=5^-. dσ/dΩ=3.5 μb/sr.
901.3 *8*	1^-	1	S: 0.0124 for L=1. dσ/dΩ=1.6 μb/sr. E(level): 2004Wi08 assumed that this state was an unresolved doublet structure consisting of a 1^- state in (pol d,α) and an additional $(3,4,5)^-$ state, as in (pol d,t) data.

† From dσ/dΩ(θ) DWBA analysis.

‡ Suggested by authors on basis of angular distributions and DWBA calculations. Natural parity states are populated by a single L transfer whereas unnatural parity states can be populated by two L-transfers. For both transfers, S=1 for the transferred pair of nucleons.