^{112}Cd(pol d,p) 2005Bu20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 1471 (2010)	1-May-2009

Vector polarization P-3 of beam was ≈60% and obtained with an atomic beam source.

E=22.0 MeV. Measured ΔE-E_{rest}, $\sigma(\theta)$, dσ/dΩ with the Munich Q3D spectrograph, a 1.8-meter long focal plane detector and a Faraday cup placed behind the ^{112}Cd target. FWHM≈5 keV. Spectra measured twice at 11 angles from 17°−55° for antiparallel spin orientations of the polarized deuteron projectile beam and covered an energy range of ≈2.7 MeV for one magnetic setting of the spectrograph. DWBA analysis.

^{113}Cd Levels

dσ/dΩ=[(dσ/dΩ)$^+$+(dσ/dΩ)$^-$]/2, where (dσ/dΩ)$^+$ and (dσ/dΩ)$^-$ are the differential cross sections measured for the two antiparallel spin orientations. Quoted values in 2005Bu20 represent maximum differential cross sections.

for detailed configurations of levels in ^{113}Cd, refer to discussion by 2005Bu20.

E(level)†	Jπ‡	L	10(S_{lj})	Comments
0.0	1/2$^+$	0	2.53	dσ/dΩ=703 μb/sr.
263.9 *12*	11/2$^-$	5	4.30	dσ/dΩ=1.069 mb/sr.
298.3 *12*	3/2$^+$	2	2.37	dσ/dΩ=1.994 mb/sr.
316.3 *12*	5/2$^+$	2	0.67	dσ/dΩ=875 μb/sr.
458.7 *12*	7/2$^+$	4	1.92	dσ/dΩ=376 μb/sr.
522.6 *12*	7/2$^-$	3	0.30	dσ/dΩ=416 μb/sr.
583.8 *12*	5/2$^+$	2	0.29	dσ/dΩ=345 μb/sr.
626.6 *12*	(3/2$^+$)	2	0.020	dσ/dΩ=23 μb/sr.
637.8 *12*	9/2$^-$	5	0.11	dσ/dΩ=12 μb/sr.
680.6 *12*	3/2$^+$	2	1.48	dσ/dΩ=1.228 mb/sr.
709.5 *12*	5/2$^+$	2	0.019	dσ/dΩ=23 μb/sr.
816.4 *12*	7/2$^+$	4	0.58	dσ/dΩ=124 μb/sr.
877.7 *12*	(3/2$^+$)	(2)	≈0.078@	dσ/dΩ=64 μb/sr.
883.3 *12*	1/2$^+$	0	0.55	dσ/dΩ=190 μb/sr.
899.1 *12*		(2)	≈0.027@	dσ/dΩ=14 μb/sr.
939.5 *12*		#		dσ/dΩ=2 μb/sr.
989.1 *12*	1/2$^+$	0	0.32	dσ/dΩ=93 μb/sr.
1007.1 *12*	5/2$^+$	2	0.026	dσ/dΩ=33 μb/sr.
1035.9 *12*	(3/2$^+$)	2	0.025	dσ/dΩ=20 μb/sr.
1048.9 *12*	(1/2$^+$)	(0)	≈0.11@	dσ/dΩ=43 μb/sr.
1108.9 *12*		#		dσ/dΩ=1 μb/sr.
1124.9 *12*		(4)	≈0.017@	dσ/dΩ=8 μb/sr.
1178.1 *12*	5/2$^+$	2	0.0087	dσ/dΩ=14 μb/sr.
1194.6 *12*	5/2$^+$	2	0.33	dσ/dΩ=401 μb/sr.
1269.1 *12*	3/2$^+$	2	0.13	dσ/dΩ=142 μb/sr.
1312.9 *12*	(11/2$^-$)	(5)	0.047	dσ/dΩ=12 μb/sr.
1329.4 *12*	(7/2$^+$)	(4)	0.013	dσ/dΩ=4 μb/sr.
1346.4 *12*	11/2$^-$	5	0.068	dσ/dΩ=18 μb/sr.
1394.8 *12*	(9/2$^+$)	(4)	0.019	dσ/dΩ=12 μb/sr.
1404.6 *12*	5/2$^+$	2	0.043	dσ/dΩ=55 μb/sr.
1449.2 *12*	11/2$^-$	5	0.10	dσ/dΩ=32 μb/sr.
1477.9 *12*	11/2$^-$	5	0.19	dσ/dΩ=55 μb/sr.
1493.7 *12*	3/2$^+$	2	0.23	dσ/dΩ=215 μb/sr.
1580.0 *12*	(3/2$^+$)	2	0.23	dσ/dΩ=115 μb/sr.
1606.9 *12*	5/2$^+$	2	0.081	dσ/dΩ=109 μb/sr.
1661.2 *12*	3/2$^+$	2	0.034	dσ/dΩ=28 μb/sr.
1670.4 *12*	(11/2$^-$)	5	0.48	dσ/dΩ=154 μb/sr.

Continued on next page (footnotes at end of table)

^{112}Cd(pol d,p) 2005Bu20 (continued)

^{113}Cd Levels (continued)

E(level)[†]	J^{π}[‡]	L	$10(S_{lj})$	Comments
1711.0 *12*		(2)	0.009	dσ/dΩ=10 μb/sr.
1735.0 *12*	$11/2^-$	5	0.128	dσ/dΩ=42 μb/sr.
1769.1 *12*	$(3/2^+)$	2	0.033	dσ/dΩ=21 μb/sr.
1788.9 *12*	$(1/2^+)$	(0)	0.016	dσ/dΩ=3 μb/sr.
1814.5 *12*		(2)	0.028	dσ/dΩ=53 μb/sr.
1830.8 *12*	$3/2^+$	2	0.012	dσ/dΩ=96 μb/sr.
1848.6 *12*	$(1/2^+)$	(0)	0.023	dσ/dΩ=8 μb/sr.
1890.1 *12*	$5/2^+$	2	0.053	dσ/dΩ=99 μb/sr.
1906.9 *12*	$7/2^-$	3	0.089	dσ/dΩ=208 μb/sr.
1940.2 *12*		#		dσ/dΩ=20 μb/sr.
1970.8 *12*		(4)	0.034	dσ/dΩ=23 μb/sr.
1999.7 *12*		#		dσ/dΩ=34 μb/sr.
2044.1 *12*	$1/2^-$	1	0.14	dσ/dΩ=59 μb/sr.
2080.4 *12*	$(1/2^+)$	(0)	0.029	dσ/dΩ=15 μb/sr.
2110.2 *25*	$(7/2^-)$	(3)	0.0044	dσ/dΩ=11 μb/sr.
2132.1 *25*	$(1/2^+)$	(0)	0.025	dσ/dΩ=2 μb/sr.
2144.9 *25*		(2)	0.08	dσ/dΩ=134 μb/sr.
2172.4 *25*	$(3/2^-)$	(1)	0.098	dσ/dΩ=166 μb/sr.
2195.8 *25*	$(3/2^-)$	(1)	0.037	dσ/dΩ=71 μb/sr.
2214.6 *25*	$7/2^-$	3	0.045	dσ/dΩ=112 μb/sr.
2242.1 *25*	$(7/2^-)$	(3)	0.095	dσ/dΩ=251 μb/sr.
2252.9 *25*		(3)	0.063	dσ/dΩ=93 μb/sr.
2268.2 *25*	$7/2^-$	3	0.054	dσ/dΩ=122 μb/sr.
2288.7 *25*		#		dσ/dΩ=34 μb/sr.
2316.9 *25*	$(3/2^-)$	(1)	0.034	dσ/dΩ=36 μb/sr.
2327.4 *25*	$(3/2^-)$	(1)	0.014	dσ/dΩ=23 μb/sr.
2349.2 *25*		#		dσ/dΩ=11 μb/sr.
2365.2 *25*		#		dσ/dΩ=22 μb/sr.
2380.0 *25*	$(3/2^-)$	(1)	0.029	dσ/dΩ=31 μb/sr.
2409.0 *25*		(2)	0.047	dσ/dΩ=69 μb/sr.
2424.1 *25*	$(3/2^-)$	(1)	0.13	dσ/dΩ=273 μb/sr.
2450.6 *25*		(1,2)		dσ/dΩ=103 μb/sr.
2477.2 *25*	$(3/2^-)$	(1)	0.046	dσ/dΩ=56 μb/sr.
2487.9 *25*	$(3/2^-)$	(1)	0.027	dσ/dΩ=19 μb/sr.
2500.4 *25*		#		dσ/dΩ=8 μb/sr.
2537.9 *25*		(3)	0.012	dσ/dΩ=25 μb/sr.
2555.9 *25*	$3/2^-$	1	0.046	dσ/dΩ=56 μb/sr.
2591.7 *25*	$(3/2^-)$	(1)	0.004	dσ/dΩ=41 μb/sr.
2632.7 *25*	$(5/2^+)$	2	0.11	dσ/dΩ=245 μb/sr.

† Comparison of sum rules for spectroscopic strengths from experiment with ibfm and qpm calculations indicate that not all states up to 2.5 MeV associated with the $3s_{1/2}$ and $2d_{3/2}$ shells were observed by 2005Bu20.

‡ Assignments based upon comparison of σ(θ) data with DWBA calculations. The distinction between two possible *j*-values for any given level (i.e. j=l+1/2 or j=l−1/2) were made on basis of deduced analyzing power for level.

σ(θ) data not characteristic of an L-value; level may be populated by multi-step processes or part of an unresolved doublet.

@ Upper limit based on population of level by multi-step processes.