^{113}Cd(pol d,t) 1990Bl10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, F. G. Kondev	NDS 124, 157 (2015)	1-Aug-2014

1990Bl10: Facility: Garching-Munich Tandem; Beam: (pol d)=20 MeV; Targets: one 205 μg/cm^2 thick enriched to 96.3% in ^{113}Cd with a 10 μg/cm^2 carbon backing and one 20 μg/cm^2 thick ^{113}Cd target; Detectors: Q3D magnetic spectrograph, two single-wire proportional counters, one plastic scintillator; Measured: E(θ), dσ/dΩ; Deduced: ^{112}Cd levels, J^π, C^{2}S; FWHM =5-9 keV depending on target thickness.

^{112}Cd Levels

$J^\pi(^{113}Cd)=1/2^+$. ^{113}Cd(g.s.) configuration=$\nu s_{1/2}$.

E(level)[†]	J^π[‡]	L[#]	C^{2}S[@]	Comments
0.0	0^+	0	1.140	C^{2}S: for $\nu s_{1/2}$ transfer.
618 *6*	2^+	2	0.374	C^{2}S: for $\nu d_{5/2}$ transfer.
1314 *13*	2^+	2	0.134	C^{2}S: for $\nu d_{5/2}$ transfer.
1417 *14*	4^+	4	0.169	C^{2}S: for $\nu g_{7/2}$ transfer.
1470 *15*	2^+	2	0.013	C^{2}S: for $\nu d_{3/2}$ transfer; Otherwise, 0.02 for $\nu d_{5/2}$ transfer.
1872 *19*	0^+	0	0.025	C^{2}S: for $\nu s_{1/2}$ transfer.
2005 *20*	3^-	3	0.014	C^{2}S: for $\nu f_{7/2}$ transfer.
2065 *21*	3^+		0.009	C^{2}S: for $\nu d_{5/2}$ transfer.
2082 *21*	4^+	4	0.093	C^{2}S: for $\nu g_{7/2}$ transfer.
2121 *21*	2^+	2	0.012	C^{2}S: for $\nu d_{3/2}$ transfer.
2155 *22*	2^+	2	0.012	C^{2}S: for $\nu d_{3/2}$ transfer; Otherwise, 0.002 for $\nu d_{5/2}$ transfer.
2230 *22*	2^+	2	0.006	C^{2}S: for $\nu d_{3/2}$ transfer.
2299 *23*	0^+	0	0.133	C^{2}S: for $\nu s_{1/2}$ transfer.
2305 *23*				
2372 *24*	5^-	5	0.232	C^{2}S: for $\nu h_{11/2}$ transfer.
2402 *24*	$2,3^+$		0.003	C^{2}S: for $\nu d_{5/2}$ transfer.
2414 *24*	$3,4^-$		0.006	C^{2}S: for $\nu f_{7/2}$ transfer.
2453 *25*	$3,4^+$		0.110	C^{2}S: for $\nu g_{7/2}$ transfer.
2491 *25*	$3,4^+$		0.054	C^{2}S: for $\nu g_{7/2}$ transfer.
2501? *25*	0^+	0	0.010	C^{2}S: for $\nu s_{1/2}$ transfer. Not observed in any other data set; In particular, it was not observed in ^{112}Cd(n,n$'\gamma$) (2001Ga44) and hence suggested to be due to ^{114}Cd presence in the target composition.
2505 *25*	2^+	2	0.034	C^{2}S: for $\nu d_{3/2}$ transfer; Otherwise, 0.011 for $\nu d_{5/2}$ transfer.
2517 *25*				Doublet consisting of $J^\pi=(1^+,2^+)$ and $J^\pi=5^-,6^-$ with C^{2}S=0.004 and 0.013 for $\nu h_{11/2}$ and $\nu d_{3/2}$ transfers, respectively.
2569 *26*	$5,6^-$		0.098	C^{2}S: for $\nu h_{11/2}$ transfer.
2589 *26*	$3,4^-$		0.005	C^{2}S: for $\nu f_{7/2}$ transfer.
2634 *26*	$2,3^+$		0.440	C^{2}S: for $\nu d_{5/2}$ transfer.
2649 *26*	0^+	0	0.023	C^{2}S: for $\nu s_{1/2}$ transfer.
2673 *27*	2^+	2	0.097	C^{2}S: for $\nu d_{3/2}$ transfer; Otherwise, 0.067 for $\nu d_{5/2}$ transfer.
2710 *27*	$3,4^+$		0.372	C^{2}S: for $\nu g_{7/2}$ transfer.
2724 *27*	$2,3^+$		0.407	C^{2}S: for $\nu d_{5/2}$ transfer.
2765 *28*	2^+	2	0.057	C^{2}S: for $\nu d_{3/2}$ transfer; Otherwise, 0.005 for $\nu d_{5/2}$ transfer.
2799 *28*	$1,2^+$		0.012	C^{2}S: for $\nu d_{3/2}$ transfer.
2818 *28*				Doublet consisting of $J^\pi=1^+,2^+$ and $J^\pi=5^-,6^-$ with C^{2}S=0.038 and 0.562 for $\nu d_{3/2}$ and $\nu h_{11/2}$ transfers, respectively.
2834 *28*	0^+	0	0.032	C^{2}S: for $\nu s_{1/2}$ transfer.
2853 *29*	0^+	0	0.004	C^{2}S: for $\nu s_{1/2}$ transfer.
2868 *29*	3^+		0.648	C^{2}S: for $\nu g_{7/2}$ transfer; Otherwise, 0.013 for $\nu d_{5/2}$ transfer.
2882 *29*	0^+	0	0.015	C^{2}S: for $\nu s_{1/2}$ transfer.
2894 *29*	$3,4^+$		0.446	C^{2}S: for $\nu g_{7/2}$ transfer.

Continued on next page (footnotes at end of table)

^{113}Cd(pol d,t) 1990Bl10 (continued)

^{112}Cd Levels (continued)

E(level)[†]	Jπ[‡]	L[#]	C²S[@]	Comments
2924 *29*	0^+	0	0.003	C^2S: for $\nu s_{1/2}$ transfer.
2931 *29*	$1,2^+$		0.014	C^2S: for $\nu d_{3/2}$ transfer.
2946 *30*				Doublet consisting of $J^\pi=2^+,3^+$ and $J^\pi=3^+,4^+$ with C^2S=0.019 and 0.060 for $\nu d_{5/2}$ and $\nu g_{7/2}$ transfers, respectively.
2960 *30*	4^-			C^2S: (f7/2+f5/2)=0.012+0.018.
2980 *30*	2^+	2	0.013	C^2S: for $\nu d_{3/2}$ transfer; Otherwise, 0.006 for $\nu d_{5/2}$ transfer.
3001 *30*	(3^+)		0.062	C^2S: for $\nu g_{7/2}$ transfer; Otherwise, 0.003 for $\nu d_{5/2}$ transfer.
3026 *30*				
3069 *31*				Doublet consisting of $J^\pi=1^+,2^+$ and $J^\pi=3^+,4^+$ with C^2S=0.016 and 0.043 for $\nu d_{3/2}$ and $\nu g_{7/2}$ transfers, respectively.
3085 *31*				Doublet consisting of $J^\pi=2^+,3^+$ and $J^\pi=5^-,6^-$ with C^2S=0.004 and 0.015 for $\nu d_{5/2}$ and $\nu h_{11/2}$transfers, respectively.
3101 *31*	2^+	2	0.016	C^2S: for $\nu d_{5/2}$ transfer; Otherwise, 0.014 for $\nu d_{3/2}$ transfer.
3109 *31*	2^+	2	0.099	C^2S: for $\nu d_{3/2}$ transfer; Otherwise, 0.018 for $\nu d_{5/2}$ transfer.
3128 *31*				Doublet consisting of $J^\pi=1^+,2^+$ and $J^\pi=5^-,6^-$ with C^2S=0.004 and 0.048 for $\nu d_{3/2}$ and $\nu h_{11/2}$ transfers, respectively.
3146 *31*	$3,4^+$		0.156	C^2S: for $\nu g_{7/2}$ transfer.
3177 *32*				Doublet consisting of $J^\pi=1^+,2^+$ and $J^\pi=3^+,4^+$ with C^2S=0.032 and 0.079 for $\nu d_{3/2}$ and $\nu g_{7/2}$ transfers, respectively.
3194 *32*	2^+	2	0.073	C^2S: for $\nu d_{3/2}$ transfer; Otherwise, 0.023 for $\nu d_{5/2}$ transfer.
3204 *32*	(3^+)		0.176	C^2S: for $\nu g_{7/2}$ transfer; Otherwise, 0.014 for $\nu d_{5/2}$ transfer.
3230 *32*	$1,2^+$		0.026	C^2S: for $\nu d_{3/2}$ transfer.
3242 *32*	2^+	2	0.013	C^2S: for $\nu d_{5/2}$ transfer; Otherwise, 0.011 for $\nu d_{3/2}$ transfer.
3252 *32*	$(0^+,3^+)$		0.033	C^2S: for $\nu g_{7/2}$ transfer; Otherwise, 0.002 for $\nu s_{1/2}$ and 0.009 for $\nu d_{5/2}$ transfers, respectively.
3259 *33*	$3,4^+$		0.068	C^2S: for $\nu g_{7/2}$ transfer.
3296 *33*	2^+	2	0.114	C^2S: for $\nu d_{5/2}$ transfer; Otherwise, 0.038 for $\nu d_{3/2}$ transfer.
3312 *33*				Doublet consisting of $J^\pi=1^+,2^+$ and $J^\pi=5^-,6^-$ with C^2S=0.014 and 0.090 for $\nu d_{3/2}$ and $\nu h_{11/2}$ transfers, respectively.
3330 *33*	$2,3^+$		0.051	C^2S: for $\nu d_{5/2}$ transfer.
3340 *33*	2^+	2	0.035	C^2S: for $\nu d_{3/2}$ transfer; Otherwise, 0.006 for $\nu d_{5/2}$ transfer.
3352 *33*	0^+	0	0.015	C^2S: for $\nu s_{1/2}$ transfer.
3361 *34*	2^+	2	0.023	C^2S: for $\nu d_{3/2}$ transfer; Otherwise, 0.004 for $\nu d_{5/2}$ transfer.
3381 *34*	2^+	2	0.009	C^2S: for $\nu d_{3/2}$ transfer; Otherwise, 0.004 for $\nu d_{5/2}$ transfer.
3402 *34*	$2,3^+$		0.050	level could be unresolved doublet. C^2S: for $\nu d_{5/2}$ transfer.
3422 *34*				Doublet consisting of $J^\pi=0^+$ and $J^\pi=1^+,2^+$ with C^2S=0.005 and 0.007 for $\nu s_{1/2}$ and $\nu d_{3/2}$ transfers, respectively.
3433 *34*				Doublet consisting of $J^\pi=0^+$ and $J^\pi=1^+,2^+$ with C^2S=0.004 and 0.020 for $\nu s_{1/2}$ and $\nu d_{3/2}$ transfers, respectively.

[†] From 1990Bl10.
[‡] From 1990Bl10, based on the deduced L values.
[#] From 1990Bl10, based on DWBA analysis with the DWUCK program.
[@] From 1990Bl10, calculated from $C^2S=(1/(2J+1))(d\sigma/d\Omega)/(d\sigma/d\Omega)_{DWBA})/N$, where N=3.33.