^{41}Ca(^{3}He,d) 1979Vo04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen[#] and Balraj Singh	NDS 135, 1 (2016)	31-May-2016

Target ^{41}Ca $J^{\pi}=7/2^{-}$.

1979Vo04: E=20 MeV ^{3}He beam was produced from the Rochester MP tandem accelerator. Enriched target of 81.8% ^{41}Ca and 18.1% ^{40}Ca about 25 μg/cm^2 on a carbon backing. Deuterons were momentum analyzed with a split-pole magnetic spectrometer and detected with nuclear emulsions, energy resolution FWHM=20 keV. Measured $\sigma(E_d,\theta)$. Deduced levels, J^{π}, L and spectroscopic factors from DWBA analysis. Includes also ^{41}Ca(^{3}He,dγ).

Energy	dσ/dΩ (mb/sr)	Energy	dσ/dΩ (mb/sr)
0	0.17	4022	0.32
611	0.56	4044	0.13
615	2.72	4175	0.53
1490	2.33	4204	1.44
1510	5.29	4245	0.17
1585	1.19	4262	0.10
1843	0.024	4276	0.078
1872	0.046	4289	0.34
1886	0.059	4370	0.083
2185	0.51	4410	0.72
2220	0.20	4469	8.51
2265	0.058	4548	2.23
2293	0.10	4582	1.22
2388	0.27	4604	0.57
2433	0.21	4665	0.48
2452	0.045	4704	0.19
2486	0.70	4727	0.86
2533	0.017	4760	0.44
2648	0.13	4786	0.24
2793	0.66	4808	0.22
2814	3.18	4827	1.14
2846	0.070	4876	0.16
2911	0.070	4971	0.060
2994	0.31	5003	0.16
3021	0.57	5028	0.26
3088	6.48	5045	0.066
3146	0.061	5084	1.94
3166	0.36	5120	4.08
3245	4.34	5140	0.57
3281	0.27	5303	0.058
3322	0.86	5326	0.45
3350	0.19	5352	0.67
3390	4.50	5370	0.33
3446	0.20	5380	0.69
3468	0.14	5434	0.46
3493	0.18	5473	0.18
3512	0.079	5520	0.35
3529	0.074	5572	0.76
3577	0.046	5633	1.69
3600	0.14	5651	4.18
3686	0.33	5771	0.47
3715	0.11	5865	0.82
3754	0.19	5964	0.77
3792	2.40		
3855	0.077		
3866	0.071		
3896	0.25		
3930	0.97		

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^{42}Sc Levels

E(level)	L	(2J+1)S†	E(level)	L	(2J+1)S†	E(level)	L	(2J+1)S†
0	3	1.3	3350 *5*			4665 *5*	1	0.45
611‡	3‡	4.0‡	3390 *5*	1+3	2.4,2.9	4704 *5*	(1)	0.26
615‡ *5*	3‡	19‡	3446 *5*	(1)	0.11	4727 *5*	1	0.80
1490 *5*	1+3	0.78,6.9	3468 *5*			4760 *5*	3	1.4
1510 *5*	1+3	2.3,11	3493 *5*	(1)	0.10	4786 *5*		
1585 *5*	1+3	0.42,3.4	3512 *5*			4808 *5*		
1843 *5*			3529 *5*			4827 *5*	1	1.3
1872 *5*	3	0.24	3577? *5*			4876 *5*		
1886 *5*	3	0.34	3600 *5*	(3)	0.45	4971 *5*		
2185 *5*	1+3	0.26,0.46	3686 *5*	3	0.99	5003 *5*	(1)	0.27
2220 *5*	1+3	0.05,0.51	3715 *5*	3	0.28	5028 *5*		
2265 *5*	(3)	0.26	3754 *5*	(1+3)	0.05,0.19	5045 *5*		
2293 *5*	(1+3)	0.03,0.30	3792 *5*	1+3	1.3,1.3	5084 *5*	(1)	3.0
2388# *5*	3(+1)	1.1,0.04	3855 *5*	(1)	0.06	5120 *5*	(1)	6.3
2433 *5*	1	0.11	3866 *5*			5140 *5*		
2452 *5*			3896 *5*			5303? *5*		
2486 *5*	3	3.2	3930 *5*			5326 *5*		
2533? *5*			4022 *5*			5352 *5*		
2648 *5*			4044 *5*			5370 *5*		
2793 *5*	(1+3)	0.27,1.5	4175 *5*	1	0.32	5380 *5*		
2814 *5*	3(+1)	9.8,0.67	4204 *5*	1+3	0.56,2.1	5434 *5*		
2846 *5*			4245 *5*			5473 *5*		
2911 *5*			4262? *5*			5520 *5*		
2994 *5*			4276 *5*			5572 *5*		
3021 *5*	0	0.29	4289 *5*	1	0.26	5633 *5*	1	3.4
3088 *5*	1+3	3.5,4.2	4370 *5*			5651 *5*	1	7.7
3146? *5*			4410 *5*	1	0.86	5771 *5*		
3166 *5*	(1+3)	0.11,0.67	4469 *5*	1	7.9	5865 *5*	(1)	2.6
3245 *5*	3	17	4548 *5*	1	1.9	5964 *5*	(1)	2.4
3281 *5*	3	0.90	4582 *5*	1	0.94			
3322 *5*	1+3	0.13,2.4	4604 *5*	(1)	0.56			

† 1979Vo04 quote spectroscopic strengths g=[(2J_f+1)/(2J_i+1)]C^2S; where J_i=7/2$^-$ and C^2=1/2.

‡ Doublet, spectroscopic factors isolated for two states from normalization to dγ-coin data in (^{3}He,dγ).

Doublet.