^{41}Ca(α,p)   1979Th03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

Target ^{41}Ca J^{π}=7/2$^-$.

1979Th03: E=25 MeV alpha beam was produced from the Niels Bohr Institute FN tandem Van de Graaff accelerator. Target was a 15 μg/cm^2 ^{41}Ca, 81.9% enriched. Reaction products were momentum analyzed by a single-gap magnetic spectrograph of the Elbek type (FWHM=25 keV) and detected with nuclear emulsions. Measured $\sigma(E_p,\theta)$, at θ(lab)=5° to 50°. Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis.

All data from 1979Th03.

^{44}Sc Levels

Spectroscopic factor C^{2}S is defined by C^{2}S=(2J+1)$\times\sigma(\theta)^{\mathrm{exp}}/\sigma(\theta)^{\mathrm{DWBA}}$, where J is the total angular momentum of the transferred particle (1979Th03). J=7/2 transfer assumed for obtaining the C^{2}S; mixture of 3/2 and 7/2 transfers assumed for levels with two C^{2}S values (1979Th03).

dσ/dΩ given under comments are measured at θ=10°, with an uncertainty estimated to be about 30% (1979Th03), except for 4254 and 4298 levels at θ=15°.

E(level)	L	C^{2}S	Comments
0	3	6.9	dσ/dΩ=36 μb/sr.
271 _15_	3	14.7	dσ/dΩ=75 μb/sr.
349 _15_	3	11.1	dσ/dΩ=59 μb/sr.
674 _15_	3	1.8	dσ/dΩ=8 μb/sr.
763 _15_	1	10.8	dσ/dΩ=17 μb/sr.
976 _15_	3	9.7	dσ/dΩ=46 μb/sr.
1058 _15_	1+3	10.8,3.8	dσ/dΩ=43 μb/sr.
1194 _15_	1+3	4.9,4.7	dσ/dΩ=35 μb/sr.
1536 _15_	3	12.8	dσ/dΩ=54 μb/sr.
1599 _15_			dσ/dΩ=8 μb/sr.
1682 _15_			dσ/dΩ=9 μb/sr.
1773 _15_			dσ/dΩ=9 μb/sr.
1958 _15_			dσ/dΩ=16 μb/sr.
2029 _15_			dσ/dΩ=12 μb/sr.
2107 _15_			dσ/dΩ=9 μb/sr.
2175 _15_			dσ/dΩ=8 μb/sr.
2241 _15_			dσ/dΩ=21 μb/sr.
2292 _15_			dσ/dΩ=23 μb/sr.
2333 _15_			dσ/dΩ=8 μb/sr.
2423 _15_			dσ/dΩ=6 μb/sr.
2470 _15_			dσ/dΩ=32 μb/sr.
2589 _15_			dσ/dΩ=19 μb/sr.
2638 _15_			dσ/dΩ=19 μb/sr.
2678 _15_			dσ/dΩ=45 μb/sr.
2768 _15_			dσ/dΩ=19 μb/sr.
2836 _15_			dσ/dΩ=4 μb/sr.
2924 _15_			dσ/dΩ=30 μb/sr.
2995 _15_			dσ/dΩ=7 μb/sr.
3057 _15_			dσ/dΩ=35 μb/sr.
3098 _15_			dσ/dΩ=16 μb/sr.
3275 _15_			dσ/dΩ=70 μb/sr.
3321 _15_			dσ/dΩ=22 μb/sr.
3366 _15_			dσ/dΩ=39 μb/sr.
3406 _15_			dσ/dΩ=15 μb/sr.
3439 _15_			dσ/dΩ=22 μb/sr.
3483 _15_			dσ/dΩ=21 μb/sr.

$^{41}\text{Ca}(\alpha,\text{p})$ 1979Th03 (continued)

^{44}Sc Levels (continued)

E(level)	Comments
4042 *15*	$d\sigma/d\Omega$=8 μb/sr.
4132 *15*	$d\sigma/d\Omega$=46 μb/sr.
4254 *15*	$d\sigma/d\Omega$=11 μb/sr.
4298 *15*	$d\sigma/d\Omega$=25 μb/sr.

$^{41}\text{Ca}(\alpha,\text{p})$ 1979Th03 (continued)