^{41}Ca(n,α):resonances   2012Ve01

History

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

2012Ve01: E=1 to 80 keV neutrons were produced via (γ,n) and (γ,F) at the gelina neutron time-of-flight facility of the Institute for Reference Materials and Measurement (rimm) in Geel (Belgium). Two flight paths for two different measurements: 8.5-m and 30-m. α particles were detected with a Frisch gridded ionization chamber. Measured σ(E$_n$), α yields. Deduced resonance energies, widths, strengths from R-Matrix analysis.

J^{π}(^{41}Ca) g.s.)=7/2$^-$.

^{42}Ca Levels

For Γ_n/Γ_p, ω_p values were used from literature (reference 20 in 2012Ve01).

ω_{α}=resonance strength.

E(level)[#]	Γ	E$_{res}$(KEV)	Comments
11481.77 9		1.09 7	
11485.18 6	0.036[‡] keV 4	4.500 2	ω_{α}=3.93 eV 18. Deduced Γ_n/Γ_p=8.5 4.
11486.86 6	0.245[‡] keV 13	6.183 5	ω_{α}=17.7 eV 6.
11490.43 9	0.13[†] keV 10	9.75 7	ω_{α}=0.4 eV 3. Deduced Γ_n/Γ_p=0.7 5.
11495.41 6	0.18[†] keV 14	14.730 14	ω_{α}=10.4 eV 12.
11499.04 10	[†]	18.36 7	ω_{α}=2.4 eV 11.
11500.15 6	0.42[†] keV 10	19.467 15	ω_{α}=28.1 eV 19. Deduced Γ_n/Γ_p=281 18.
11503.69 11	0.60[†] keV 20	23.01 9	ω_{α}=1.3 eV 7. Deduced Γ_n/Γ_p=7 4.
11507.09 13	[†]	26.41 12	ω_{α}=1.2 eV 7.
11510.34 16	1.25[†] keV 10	29.66 14	ω_{α}=1.3 eV 7. Deduced Γ_n/Γ_p=3.0 16.
11514.36 15	1.0[†] keV 6	33.68 14	ω_{α}=5.5 eV 22. Deduced Γ_n/Γ_p=15 6.
11519.6 3	2.0[†] keV 12	38.9 3	ω_{α}=12 eV 5. Deduced Γ_n/Γ_p=64 26.
11523.28 24	[†]	42.60 24	ω_{α}=2.7 eV 16. Deduced Γ_n/Γ_p=40 23.
11530.7 3	[†]	50.0 3	ω_{α}=3.7 eV 19. Deduced Γ_n/Γ_p=8 4.
11537.12 25	[†]	56.44 24	ω_{α}=16 eV 5.

[†] From the measurement with the flight path=8.5 min and using Voigt fit method.

[‡] From R-matrix analysis using SAMMY code.

[#] S(n)(^{42}Ca)=11480.67 keV 6 (2012Wa38). The E(res) values listed in tables II and III are assumed to be in c.m. system.