

$^{46}\text{Ca}(t,\alpha),(\text{d},^3\text{He})$ 1971Yn02,1968Sa09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 109, 171 (2008)	30-Oct-2007

1968Sa09: ET=12.93 MeV. Measured $\sigma(\theta=12.5^\circ-87.5^\circ)$; mag spect, emulsions. Data At 12.5° had large uncertainties caused by a heavy background of triton and deuteron tracks. DWBA.

1971Yn02: ED=22.4 MeV. Measured $\sigma(\theta=16^\circ-27^\circ, 4 \text{ angles})$; $\Delta E/E$ telescope, FWHM ≈ 90 keV. DWBA. The negative Q value and the large admixture of ^{40}Ca In the target made it difficult to obtain reliable data.

All data are from 1968Sa09, except As noted.

 ^{45}K Levels

Configuration: $\text{C}^2\text{S}((\text{d},^3\text{He}),\text{g.s.})$ is considerably smaller than the results for $^{42}\text{Ca}(\text{d},^3\text{He})$ and $^{44}\text{Ca}(\text{d},^3\text{He})$, which were close to the theoretical expectation $\text{C}^2\text{S}=4.0$. The value $\text{C}^2\text{S}((\text{d},^3\text{He}),470)=1.0$ is also about half the theoretical value of $\text{C}^2\text{S}=2.0$ obtained from transitions to ^{43}K and ^{41}K . This result indicates a probable appreciable admixture of core-excited configurations In the g.s. wave function of ^{45}K . (1971Yn02).

E(level)	L [†]	C ² S [‡]	Comments
0.0	2	3.1	C ² S: C ² S(d, ³ He)=1.5 (1971Yn02,JULIE).
470 8	0	1.4	C ² S: C ² S(d, ³ He)=1.0 (1971Yn02,JULIE).
1011 12			L: nonstripping.
1080 10	(3)	0.25	configuration: 1f7/2.
1417 10	0	0.08	
1714 10	(0,2)	0.12,0.36	configuration: 2s1/2 or 1d3/2.
3753 10	(2)	0.6	configuration: 1d3/2.

[†] From characteristic shape of angular distributions (empirical).

[‡] Normalized by assuming $\text{C}^2\text{S}(^{48}\text{Ca}(t,\alpha),359,\text{L}=2)=4.0$ which is consistent with $\text{C}^2\text{S}(^{48}\text{Ca}(\text{d},^3\text{He}),359,\text{L}=2)=4.2$ (1985Ba14).