

$^{43}\text{Ca}(^3\text{He},t)$ 1971A119

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen [#]		NDS 126, 1 (2015)	31-Mar-2015

$J^\pi(^{43}\text{Ca g.s.})=7/2^-$.

1971A119 (also **1971ScYM**): E=26 MeV ^3He beam was produced from the MP tandem Van de Graaff at the University of Rochester Nuclear Structure Laboratory. Target of 81.12% enriched $50\text{ }\mu\text{g}/\text{cm}^2$ CaCO_3 on a $20\text{ }\mu\text{g}/\text{cm}^2$ carbon backing. Tritons were momentum analyzed with an ENge split-pole spectrograph (FWHM=15-20 keV) and detected in $50\text{ }\mu\text{g}$ NTB emulsion in the focal plane. Measured $\sigma(E_t, \theta)$. Deduced levels. Uncertainty in cross sections is $\approx 25\%$.

1971Be29: E=24.6 MeV. Measured $\sigma(\theta)$. Deduced Coulomb-displacement energy=7238 4.

All data are from **1971A119** unless otherwise noted.

 ^{43}Sc Levels

E(level)	$d\sigma/d\Omega$ (30°) ($\mu\text{b}/\text{sr}$)	E(level)	L	$d\sigma/d\Omega$ (30°) ($\mu\text{b}/\text{sr}$)
0 [@]	28.9	2983 4		16.3
152 [†]	1.7	3120 4		15.4
473 [†]	0.8	3254 4		9.9
846 [†]	<1.1 [#]	3324 4		9.6
856 [†]	<1.1 [#]	3464 [‡] 8		7.7
880 [†]	<1.1 [#]	3667 8		
1178 4	3.9	3843 8		7.4
1402 4	1.5	3894 8		13.9
1810 [†]	0.8	3931 8		7.1
1826 4	9.2	4128? ^{&} 8		3.2
1881 4	6.5	4230 ^a 8	0	46.8
2244 [†]	0.6	4276 8		3.5
2284 [@] 4	11.6	4343 8		3.0
2333 [†]	0.7	4371 [‡] 8		18.9
2455 [‡] 4	16.7	4511 8		8.8
2620? [†]	<0.5	4658 [‡] 8		
2630 4	6.3	4766 8		8.8
2670 [†]	1.2	4821 ^b 8	2	4.4
2756 [@] 4	4.7	4871 8		21.2

[†] Rounded off energy from Adopted Levels. Poor statistics in ($^3\text{He},t$) (**1971A119**).

[‡] Doublet.

[#] 1.1 for 846+856+880.

[@] $\sigma(\theta)$ is similar to 1^+ to 0^+ spin-flip transitions.

[&] Possible contaminant.

^a Average of 4234 8 (**1971Be29**) and 4226 8 (**1971A119**). Strongest transition. Interpreted as $\Delta(T)=0$ transition to the IAS of ^{43}Ca g.s. Coulomb-displacement energy=7238 4 (**1971Be29**).

^b Probable IAS of 593, $3/2^-$ in ^{43}Ca .