## $^{45}$Sc(d,$^{3}$He),(pol d,$^{3}$He) 1969Ma26

History

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

Target $J^{\pi}$($^{45}$Sc g.s.)=7/2$^{-}$.

1969Ma26: (d,$^{3}$He) E=52 MeV deuteron beam was produced from the Karlsruhe cyclotron. Target was 0.15 mg/cm$^{2}$ $^{45}$Sc by vacuum deposition of natural scandium. Reaction products were detected by ΔE-E telescopes of $CO_2$ cooled surface barrier detectors (FWHM=250-350 keV). Measured $\sigma$(E($^{3}$He),$\theta$). Deduced levels, J, $\pi$, L-transfers, spectroscopic factors from DWBA analysis.

1983En02: (pol d,$^{3}$He) E=12.4 MeV tensor-polarized deuteron beam was produced from the atomic-beam ion source on the University of Birmingham Radial Ridge cyclotron. Target was 2.0 mg/cm$^{2}$ self-supporting natural scandium. Reaction products were detected with four silicon ΔE-E telescopes. Measured $\sigma$(E($^{3}$He),$\theta$), analyzing powers. Vector analyzing power for ground state.

### $^{44}$Ca Levels

Spectroscopic factor $C^2S$:N×g×$C^2S$=$\sigma(\theta)^{exp}/\sigma(\theta)^{DWBA}$, where n is the normalization factor and g=$(2J_f+1)/(2J_i+1)$ (1966Ba54). N×g=2.95 in 1969Ma26.

| E(level)† | $J^{\pi}$ | L‡ | $C^2S$‡ | E(level)† | L‡ | $C^2S$‡ | E(level)† | L‡ | $C^2S$‡ |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0$^{+}$# | 3 | 0.40 | 2660 | 3 | 0.16 | 5070 | 0 | 0.46 |
| 1160 | | 3 | 0.15 | 3370 | 2 | 0.92 | 5430 | 0 | 0.50 |
| 1880 | | 3 | 0.11 | 3780 | 2 | 1.70 | 6100 | 2 | 0.92 |
| 2290 | | 3 | 0.09 | 4480 | 0 | 0.55 | | | |

† From 1969Ma26 with ΔE=100 keV.
‡ From DWBA analysis of measured $\sigma(\theta)$ (1969Ma26).
# From analyzing power in 1983En02. See 1983En02 for vector analyzing power data.