^{44}Ca(t,^{3}He) 1985Aj03

History

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

1985Aj03: E(t)=25 MeV triton beam produced from the Los Alamos three stage Van de Graaff facility. Target of a 188 μg/cm^2 ^{44}Ca (95.35% enriched). Reaction products were momentum analyzed with a Q3D spectrometer. Measured σ(E(^{3}He),θ), θ=5.5° to 50°. Deduced levels, J^π from the analysis using coupled-channel Born approximation (CCBA) using CHUCK computer code. See also 1970Aj01 at E(t)=20 MeV.

^{44}K Levels

E(level)[†]	J^π[@]	L[#]	Comments
0	2^-	1+3	Poor fit to $\sigma(\theta)$ data (1985Aj03).
183			Weakly populated level at all angles (1985Aj03).
383 *5*	2^-	1+3	The fits of $\sigma(\theta)$ data to 3^+ and 3^- could not be excluded (1985Aj03).
520 *5*	4^-[&]	3+5	
811 *5*	5^-[&]	5	
969 *5*	3^+	2+4	The fit of $\sigma(\theta)$ data to L=3, $J^\pi=3^-$ could not be totally excluded (1985Aj03).
1003 *12*	4^+	4	J^π: 1985Aj03 mentioned that 4^+ was more likely than 3^-, whereas 3^+ was excluded.
1048 *10*	4^+,3^-		J^π: from fit of $\sigma(\theta)$ data to CCBA calculations; L-transfers not listed by 1985Aj03.
1075 *10*	2^-	1+3	
1480 *10*	(1^+)	(0+2)	The $\sigma(\theta)$ data did not fit CCBA calculations for L=1, $J^\pi=1^-$ (1985Aj03).
1500 *15*			
1990[‡] *20*			
2060[‡] *20*	5^+,4^-		E(level),J^π: from fit of $\sigma(\theta)$ data to CCBA calculations for possible unresolved states; L-transfers not listed (1985Aj03). Note that $J^\pi=5^+,4^-$ in Fig. 6 of 1985Aj03, but 5^+,4 in authors′ Table IV.

[†] From 1985Aj03.

[‡] May be due to unresolved states (1985Aj03).

[#] L-transfers assumed in the CCBA calculations (1985Aj03).

[@] From 1985Aj03, based on comparisons of experimental angular distributions to the CCBA calculations. In the Adopted Levels, J^π assignments for the excited states in this dataset are listed in parentheses, with the consideration that these spins do not seem unambiguously determined from the listed L-transfers in Table IV of 1985Aj03, and for some of the levels, other possible J^π values are not excluded as stated by 1985Aj03.

[&] Alternate sequence of 5^- for the 520 level and 4^- for the 811 level could not be excluded by the CCBA fits to $\sigma(\theta)$ data (1985Aj03), but γ from the 520 level to the 2^- g.s. favors 4^- for the 520 level, thus 5^- for the 811 level (see the Adopted Levels).