

⁸⁴Sr(³He, α) 1978Me01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 125, 201 (2015)	31-Dec-2014

E(³He)=18 MeV. Measured $\sigma(\theta)$ (steps of 3.75° starting at 3.75°) using multiangle spectrograph and Ilford K-1 emulsion plates (FWHM \approx 35 keV); DWBA analysis.

⁸³Sr Levels

Authors assume that the highest-energy α group (E=x, L=4) populates 35.5-keV level (see Adopted Levels). They offset their level energies to match the E=259-keV, $J^\pi=1/2^-$ level, giving x=26 keV. Thus, there is a 10 keV discrepancy in the correspondence with levels observed in other datasets, even at the lowest energies. This worsens with increasing excitation energy, as indicated in the comments. The uncertainties in the level energies may be underestimated.

E(level)	L [‡]	C ² S [#]	Comments
x	4	[6]	E(level): corresponds to the E=35.5-keV level in the Adopted Levels.
x+233 5	1	1.5	E(level): corresponds to the E=259-keV level in the Adopted Levels.
x+487 5	3	3.4	E(level): probable correspondence to the E=490-keV level in the Adopted Levels.
x+649 5	1	1.6	E(level): corresponds to the E=681-keV level in the Adopted Levels.
x+768 5	(3)	0.34	E(level): probable correspondence to the E=791-keV level in the Adopted Levels.
x+928 5	(3+1)	(1.9+1.1)	E(level): doublet; one component corresponds the E=952- or 963-keV levels in the Adopted Levels. No corresponding level for the L=1 component in any data set.
x+1206? 5			E(level): probable correspondence to the E=1233- or 1239-keV levels in the Adopted Levels.
x+1375 5	(3)	(0.27)	E(level): probable correspondence to the E=1434-keV level in the Adopted Levels.
x+1482 [†] 5	(1)	(0.34)	
x+1740 5	3	1.5	E(level): doublet; one component corresponds perhaps to the E=1753-keV level in the Adopted Levels.
x+1903 5	(3)	(0.30)	E(level): probable correspondence to the E=1915- or 1964-keV levels in the Adopted Levels.
x+1963 5	(3)	(0.42)	E(level): probable correspondence to the E=2017-keV level in the Adopted Levels.
x+2151 [†] 5	(4)	(0.47)	
x+2301 [†] 5	(1)	(0.44)	
x+3371 [†] 5			
x+8205 5	1+3		E(level): possible isobaric analog state to ground state and 5.2-keV level of ⁸³ Rb.
x+8275 5	1		E(level): possible isobaric analog state to 99.5-keV level of ⁸³ Rb.
x+8658 5	1+2		E(level): possible isobaric analog state to 390- and 424-keV levels of ⁸³ Rb.
x+9038 5			

[†] No corresponding level in the Adopted Levels.

[‡] From comparison of measured $\sigma(\theta)$ to DWBA calculations. Angular distributions for L \neq 1 are quite similar and structureless, so most assignments are not definite.

[#] From DWBA, derived from $d\sigma/d\Omega_{\text{exp}}=N\times C^2S\times\sigma_{\text{DWBA}}/(2J+1)$. Normalization is determined by fixing C²S=6.0 for the E=x, L=4 state (the expected 1g_{9/2} strength for neutron pickup from a target with 46 neutrons) which yields N=14.