^{150}Nd(d,^{3}He) 1981VaZJ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

1981VaZJ (also 1979SaZQ,1978SaZP): E=50 MeV. Self-supporting and enriched targets. Measured ^{3}He spectra, $\sigma(\theta)$. FWHM=25-30 keV. All the references are from KVI annual lab reports.

The results of this study are considered tentative (evaluators) for the following reasons:

a) the L(^{3}He,d)=4 for g.s. implying J^{π}=7/2^{+},9/2^{+} disagrees with J^{π}= (5/2^{+}) inferred from log *ft* values to 1/2 and 3/2 states in ^{149}Nd (see β^{-} feeding and log *ft* values to 258,286,365,571 and 881 levels in ^{149}Pr β^{-} decay).

b) in the isotone, ^{151}Pm, studied by the ^{152}Sm(t,α) reaction (1972Bu22), σ(5/2^{+} g.s. member of the [413] band) is less than 10% of that for the 7/2^{+} member. Since a similar situation exists for the ^{150}Sm(d,^{3}He) reaction and the background is larger in the (d,^{3}He) than the (t,α) reaction, it is possible that the g.s. of ^{149}Pr has been incorrectly identified.

Q(d,^{3}He)=−4515 *10* from 1978SaZP.

Mass excess (^{149}Pr)=−70977 *10* from 1979SaZQ, which can be compared with −71039 *10* in 2021Wa16; difference of 62 keV.

^{149}Pr Levels

E(level)[†]	L	Comments
0[‡]	4	J$^{\pi}$: L=4 inconsistent with J^{π}=(5/2^{+}) from log *ft* values to 1/2^{-} and 3/2^{-} states in ^{149}Nd (see ^{149}Ce β^{-} decay).
40[‡]	2	
80[‡]	2	
220	(2)	
260	4	
440[‡]	2	
550	4	
590	2	
660	(2)	
980	(0)	

[†] In view of the above discussion, the g.s. of ^{149}Pr may not have been correctly assigned in this reaction. The absolute energies of other groups will then also be questionable. Uncertainty is not given by 1981VaZJ but estimated (evaluators) to be ≈8 keV.

[‡] Strongly populated group.