

$^{181}\text{Ta}(^{22}\text{Ne},^{18}\text{N})$ [1989Zh04](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	R. Spitzer, J. H. Kelley		ENSDF	30-Jun-2021

[1989Zh04](#): A thick Ta target was bombarded by a 35 MeV/nucleon ^{22}Ne beam to produce ^{18}N ions that were selected by the Reaction Products Mass Separator (RPMS) at the NSCL/MSU. The ^{18}N ions were implanted into a telescope comprised of five Si detectors that was situated in the focal plane of the RPMS. An implantation period of 1.2 s was used for collecting activity; this was followed by a 1.3 s counting period. The β -decay products were detected with essentially 100% efficiency. The apparatus was calibrated using β -delayed α -particle emissions groups from ^{11}Be and ^8Li nuclei.

Two strong groups are observed in the α -particle spectrum, resulting from decays of the $^{18}\text{O}^*(7616,8038)$ states with $J^\pi=1_3^-$ and 1_4^- , respectively. A broad peak near 3 MeV ($E_x=9$ MeV, $\Gamma_\alpha\approx 500$ keV) is also observed but the origin was unclear. ([1987Aj02](#)) suggests there may be 6 unresolved α -particle emitting groups in this region. The β -decay branching ratios to $^{18}\text{O}^*(7616,8038)$ are found as 6.8% 5 and 1.8% 2 assuming $\Gamma_\alpha/\Gamma=1.0$ for these states. The branching ratio $\geq(3.6\ 2)\%$ was deduced for the broad structure. A total β -delayed α -decay branching ratio of (12.2 6)% is deduced.

 ^{18}N Levels

E(level)	Comments
0	$\% \beta^- \alpha = 12.2\ 6$ (1989Zh04)