

$^{18}\text{O}(\text{n,p})$  1964Ch19

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

**1964Ch19:**  $^{18}\text{O}(\text{n,p})$  was first measured using the Palo Alto Lockheed Missiles and Space Company Van de Graaff accelerator. The results confirmed the particle stability of  $^{18}\text{N}$ .

A beam of  $\approx 19$  MeV neutrons, produced via the T(d,n) reaction, irradiated a 97%  $^{18}\text{O}$  enriched water sample for a second before it was transferred to a counting area where combinations of  $\beta$ - $\gamma$ - $\gamma$  coincidence events were collected for about five seconds using a pair of NaI  $\gamma$ -ray detectors and a plastic scintillator  $\beta$ -ray detector. Measurements with a  $^{16}\text{O}$  water sample were also collected so observations could be compared with the well-understood reaction to  $^{16}\text{N}$ . The  $\beta$ -spectrum was measured and a strong feeding of  $^{18}\text{O}^*(4.45 \text{ MeV})$  was observed.

The  $\beta$  endpoint was investigated using  $\gamma$ - $\beta$  coincidences; the  $^{18}\text{N}$ - $^{18}\text{O}$  mass difference was found as 13.9 MeV *4*, implying  $\Delta M = 13.1 \text{ MeV } 4$ . There is no evidence for a strong decay branch to  $^{18}\text{O}_{\text{g.s.}}$ .  $T_{1/2} = 0.63 \text{ s } 3$  was deduced from the  $\gamma$ -gated  $\beta$ -ray decay curve. The ground state spin was constrained as  $J = (0, 1, 2)^-$  from analysis of  $\log ft$ .

**2001KaZY:** The  $^{18}\text{O}(\text{n,p})$  cross section was measured at  $E_n = 14.94 \text{ MeV}$  using activation techniques at the JAERI D-T neutron source.  $\sigma = 1.15 \text{ mb } 17$ .

 $^{18}\text{N}$  Levels

E(level)	$T_{1/2}$	Comments
$0^\dagger$	0.63 s <i>3</i>	E(level): $\Delta M = 13.1 \text{ MeV } 4$ . $T_{1/2}$ : From (1964Ch19).

$\dagger$  The ground state was later resolved as a doublet in  $^{18}\text{O}(^7\text{Li}, ^7\text{Be})$  (1983Pu01).