

²H(²⁷Ne,²⁵O) 2019Sw04

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 205,1 (2025)	31-May-2025

Adapted/Edited the XUNDL dataset compiled by J. Chen (NSCL, MSU), September 22, 2021.

2019Sw04: Neutron-unbound states were populated via a two-proton knockout reaction with an 101.3 MeV/nucleon ²⁷Ne beam produced by fragmentation of a 140 MeV/nucleon ⁴⁸Ca primary beam from the Coupled Cyclotron Facility at NSCL on a liquid deuterium target. Beam fragments were separated by the A1900 Fragment separator and charged fragments after reaction were re-directed by a large-gap superconducting dipole magnet and identified by energy loss in an ionization chamber and time-of-flight measured using a plastic scintillator. Emitted neutrons were detected by the MoNA-LISA array of 2-m-long plastic scintillator bars. Measured decay energy. Invariant mass spectroscopy was used to reconstruct the decay energy (²²O+3n). Deduced evidence for an excited state at E=9 MeV.

²⁵O Levels

E(level)	Comments
9000	E(level): from the decay energy spectrum constructed using invariant mass spectroscopy, based on measured neutron energies in a decay sequence of three neutrons. The sum of measured neutron energies of 2.3 MeV, 0.65 MeV and 50 keV is 3 MeV; and the three-neutron separation energy is about 6 MeV (2019Sw04).