

²⁵O

An unbound state of ²⁵O was first reported by Hoffman et al. in 2008 in “Determination of the N = 16 Shell Closure at the Oxygen Drip Line” (2008Ho03). A secondary beam of 85 MeV/u ²⁶F produced by the Michigan State Coupled Cyclotron Facility and the A1900 fragment separator bombarded a beryllium target and ²⁵O was produced in a one-proton knockout reaction. The excitation energy spectrum of ²⁵O was reconstructed by measuring neutrons in coincidence with ²⁴O fragments. “A resonance energy of $E_{decay} = 770_{-10}^{+20}$ keV and a width of $\Gamma = 172(30)$ keV were the best fit to the data... The determination of the mass of ²⁵O from the resonance energy is dependent on the mass of ²⁴O. A recent experiment on neutron-rich nuclei remeasured the mass of ²⁴O, adopting a mass excess of 18600(100) keV, 470 keV below the currently accepted value of 19070(240) keV of the atomic mass evaluation (AME). The ²⁵O mass excess is then 27440(110) keV and 27910(245) keV for [the new ²⁴O mass data] and the AME, respectively.” An initial report that ²⁵O might be bound (1981St23) could not be confirmed (1985La03).

Adapted from reference (2012Th01)

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