

³⁴Na

Langevin et al. reported the observation of ³⁴Na in the 1983 paper “³⁵Na: A new neutron-rich sodium isotope” (1983La12). The CERN synchrotron was used to bombard an iridium target with 10 GeV protons. ³⁴Na was identified with the on-line mass spectrometer. Beta-delayed neutrons were measured with a NE213 liquid scintillator. “During the collection of alkali isotopes a multiscaler device defines the time occurrence of each 3-coincident neutron event after each fast extraction beam pulse. [The figure] shows the experimental time occurrence of β -coincident neutrons for the collection of mass 34 and 35 alkali ions. The 33 events of mass 35 were obtained in 20 h, corresponding to 5×10^{16} protons on the target... A straightforward χ^2 analysis of the experimental results of [the figure] convoluting the time dependence of Na ion production and the β -decay gives half-lives of (5.5 ± 1.0) ms for ³⁴Na and (1.5 ± 0.5) ms for ³⁵Na.” Langevin et al. did not consider the observation of ³⁴Na a discovery referring to earlier conference proceedings and an unpublished Thèse de Doctorat.

The production yield of ³⁴Na was reported by Détraz et al. (1979De02) and Ravn (1979Ra37) in 1979, however, no properties of ³⁴Na were measured nor were individual nuclei uniquely identified. The results by Détraz et al. were later in the year also adopted in a paper by Westfall et al. (1979We10).

Adapted from reference (2012Th10)

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