

## <sup>149</sup>Lu

In 2022, Auranen et al. announced the discovery of <sup>149</sup>Lu in “Nanosecond-Scale Proton Emission from Strongly Oblate-Deformed <sup>149</sup>Lu” (2022Au01). The University of Jyväskylä K130 cyclotron provided <sup>58</sup>Ni beams of 310 and 320 MeV which were focused on 170 μg/cm<sup>2</sup> thick enriched <sup>96</sup>Ru evaporated on an aluminum foil. Evaporation residues were separated with the Mass Analyzing Recoil Apparatus (MARA) and deposited in a double-sided silicon strip detector (DSSD) located behind a multi-wire proportional counter. Emitted protons were measured by recording a long wave form sample of each event from one side of the DSSD. “Using the fusion-evaporation reaction <sup>96</sup>Ru(<sup>58</sup>Ni,p4n)<sup>149</sup>Lu and the MARA vacuum-mode recoil separator, a new proton-emitting isotope <sup>149</sup>Lu has been identified. The measured decay Q value of 1920(20) keV is the highest measured for a ground-state proton decay, and it naturally leads to the shortest directly measured half-life of 450<sup>+170</sup><sub>-100</sub> ns for a ground-state proton emitter.”

Adapted from reference (2023Th03)

2022Au01 K. Auranen, A. D. Briscoe, L. S. Ferreira, T. Grahn *et al.*, Phys. Rev. Lett. **128**, 112501 (2022).

2023Th03 M. Thoennessen, Int. J. Mod. Phys. E **32**, 2330001 (2023).

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