Proton halo in fluorine-17 as a fragile 17-body quantum state

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Figures: (Top) Artist's rendition of the proton halo nucleus ^{17}F. The halo consists of one proton orbiting the ^{16}O nucleus. (Bottom) Energies of low-lying J^p = 1/2$^+$, 3/2$^+$ 5/2$^+$ states (full lines) compared to data (dashed lines), as a function of the oscillator frequency of the model space. The 1/2$^+$ proton halo state agrees very well with experiment.

Reference: G. Hagen, T. Papenbrock, and M. Hjorth-Jensen, arXiv:1003.1995 (2010); accepted for publication in Physical Review Letters.

The Team: This collaboration involves Oak Ridge National Laboratory (G. Hagen), the University of Tennessee (Thomas Papenbrock), and the University of Oslo (Morten Hjorth-Jensen).