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Absolute Nuclear Charge Radius Measurements with EUV Spectroscopy at TITAN EBIT

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The nuclear charge radius is a fundamental property of the nucleus, providing crucial information such as the emergence of deformation or unexpected “magicity”. This structural information is paramount in probing the electroweak interaction, for example, through searches for atomic parity violation (APV) and electric dipole moments (EDM). Currently there are no experimentally measured absolute nuclear charge radii for elements beyond bismuth ($Z = 83$), except uranium ($Z = 92$) and thorium ($Z = 90$). At TRIUMF’s Ion Trap for Atomic and Nuclear science (TITAN) facility, an extreme-ultraviolet (EUV) spectrometer will be incorporated into the Electron Beam Ion Trap (EBIT) to measure the absolute nuclear charge radii. The first candidates we will study are ^{211}Fr and a suitable spin-0 isotope of Ra.

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Please select: Experiment or Theory

Experiment

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