

**Plenary Talk**

PLV VI Wed 9:45 HS 1+2

**High-precision Penning Trap Mass Measurements of Rare Isotopes** — ●GEORG BOLLEN — Facility for Rare Isotope Beams, Michigan State University, East Lansing, MI, USA

The mass of an atom and its inherent connection with the atomic and nuclear binding energy is a fundamental property of the atomic nucleus. Precise mass values of rare isotopes far away from the valley of beta-stability provide important insight into nuclear structure, are critical for the understanding of nucleosynthesis, and contribute to the test of fundamental interactions. Penning traps have become important instruments for mass determination of such isotopes. They were first introduced at ISOLTRAP at the Isotope Mass Separator On-Line

facility (ISOLDE) at CERN. ISOLTRAP's success led to Penning trap mass spectrometers now being in operation at several facility worldwide, where isotopes are produced with different means. LEBIT at the Facility for Rare Isotope Beams (FRIB) at Michigan State University (MSU) is the only instrument that allows rare isotopes produced through fragmentation of stable isotopes at half the speed of light to be captured in a Penning trap for precision mass measurements. I will provide an overview of Penning trap mass measurement activities for rare isotopes and their science motivation, discuss technical advances towards broader application and higher sensitivity, present examples of results achieved with LEBIT, and give my perspective on developments in this field.