UNIVERSITY OF NOTRE DAME
DEPARTMENT OF PHYSICS

NUCLEAR SEMINAR

Monday, February 20

Precise Atomic Mass Measurements for Tests of Fundamental Interactions

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NSCL, MSU

Reflecting the sum of all interactions inside a nucleus, its mass is an important characterizing property. Precisely known nuclear masses are an integral part in several different fields of fundamental science. Calculations of the astrophysical r-process, nuclear structure studies, and investigations of fundamental interactions require mass measurements of rare isotopes.

With the Penning trap mass spectrometer LEBIT, located at the National Superconducting Cyclotron Laboratory, mass data of highest precision is obtained. The rare isotopes of interest are produced by heavy-ion fragmentation and subsequent in-flight separation and delivered to LEBIT which uses the destructive time-of-flight ion cyclotron resonance technique. As one moves further from the valley of stability, production rates of the exotic isotopes decline. In order to access rare isotopes being delivered at low rates, the Single Ion Penning trap is being developed using the FT-ICR technique.

This presentation will concentrate on the most recent mass measurements at LEBIT emphasizing their impact on the topics of nuclear structure and fundamental interactions.

4 pm – 5 pm

Nuclear Science Laboratory

124 Nieuwland Science Hall

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All interested persons are cordially invited to attend

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Refreshments will be served prior to the seminar in room 124