universität wien
Faculty of Physics

# Experimental Nuclear Astrophysics with ion accelerators


## Daniel Bemmerer

**Helmholtz-Zentrum Dresden-Rossendorf, Germany**


**Time:** **Tuesday, September 30, 2025, 9:30**

**Location:** **Lise Meitner Lecture Hall**
9. Boltzmanngasse 5


The chemical elements in the periodic table have been created in astrophysical scenarios including the first minutes of the Big Bang, fusion and neutron capture processes in stars, and spectacular stellar explosions and mergers. The abundances of these elements in our solar system range over twelve orders of magnitude. Together with the isotopes, this provides a detailed fingerprint of the processes responsible for their production. Ion accelerators offer the opportunity to study these production processes in the laboratory: Low-energy devices underground for cross section measurements, classical ion accelerators to selectively study relevant nuclear excited states, neutron sources, and accelerators used as mass spectrometers. I will review the status and perspectives of the field and identify perspectives for accelerator based nuclear astrophysics in Vienna. I will briefly touch on applications of accelerator based methods also in other fields.


As part of the presentation, there will be a teaching demonstration on the topic "The classical and the quantum harmonic oscillator".