Contribution ID: **99** Type: **invited**

Radioactive ion beams in nuclear astrophysics

Tuesday, 8 June 2010 11:30 (30 minutes)

The nucleosynthesis of elements beyond iron is dominated by neutron captures in the s and r processes. However, 32 so-called p-nuclei are thought to be produced in the p process, where proton-rich nuclei are made by sequences of photodisintegrations and (p,g) reactions and following decays on existing r- and s-seed nuclei.

Charged-particle induced cross section measurements in the astrophysically interesting energy range are already very challenging on stable nuclei. Only a minute part of the nuclei involved in p-process networks, however, is stable. The most promising approach to determine the desired reaction rates is to produce the isotopes in Radioactive Ion Beam facilities and to investigate the reactions in inverse kinematics. A pioneering experiment was recently performed at the Experimental Storage Ring (ESR) at GSI. Fully stripped ions of 96Ru were injected into the storage ring and slowed down to a few MeV/nucleon. The reaction products were detected with different particle detectors.

Similarly photon-induced cross sections on radioactive nuclei can be measured in inverse kinematics applying the Coulomb-dissociation method. This can be done at the LAND/R3B setup at GSI. Recent examples applying this method to radioactive beams will be presented.

This project is supported by the HGF Young Investigators Project VH-NG-327.

Author: Dr REIFARTH, Rene (GSI Darmstadt Germany)

Presenter: Dr REIFARTH, Rene (GSI Darmstadt Germany)

Session Classification: Radioactive Ion Beams in Nuclear Astrophysics

Track Classification: Radioactive ion beams in nuclear astrophysics