

Overview of the PreSPEC-AGATA campaigns at GSI.

Tuesday, 10 September 2013 16:00 (30 minutes)

In 2012, Coulomb excitation and secondary fragmentation experiments using radioactive ion beams at relativistic energies have been performed for the first time with the new PreSPEC-AGATA setup.

PreSPEC-AGATA is a unique combination of the FRagment Separator (FRS), used for providing and selecting specific radioactive ion beams, the Lund-York-Cologne CALorimeter (LYCCA), which discriminates heavy ions produced in nuclear reactions taking place in a secondary target, the HECTOR+ (LaBr₃/BaF₂) array and the Advanced Gamma Tracking Array (AGATA), for the precise measurement of gamma-ray energies.

The first campaign was dedicated to the questions of how the collectivity is build-up from single particle excitations and how it evolves away from magic nuclei.

Excitation probabilities of the first excited states in nuclei south-west of ²⁰⁸Pb were measured, including heavy Pb, Hg and Pt isotopes. The level scheme of ⁵²Fe, nucleus with only two valence proton and neutron holes in the doubly magic ⁵⁶Ni, shows rotational behavior for the low spin states. The nucleus was not only populated in its ground state but also in the 12+ isomeric excited state, which was Coulomb excited using a gold target. For ⁶⁴Fe the Pygmy dipole resonance was studied, which probes the properties of neutron skin. Finally, neutron rich Zr isotopes were excited to determine their shape evolution.

An overview of the 2012 physics campaign and the planned PreSPEC-AGATA experiments for 2014 will be presented.

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