

SiM-X: Silicon microcalorimeters for high-precision X-ray spectroscopy – Status and Perspectives

Monday, 24 April 2017 19:10 (2 hours)

High-precision X-ray spectroscopy of highly-charged heavy ions is one of the established subjects within the program of SPARC. At CRYRING, such experiments profit from the low ion velocity, which minimizes systematic errors from correction of the Doppler shift. One prominent example is the investigation of the 1s Lamb Shift of hydrogen-like heavy ions.

As a benchmark for a detector with larger solid angle, a new detector setup with a dry $^3\text{He}/^4\text{He}$ dilution refrigerator and an array of 32 detector pixels was installed at the ESR in the recent test beamtime in June 2016. The cryogenic system performed perfectly well. An energy resolution of around 150 eV at a X-ray energy of 30 keV was obtained, which allowed the observation of Lyman-alpha emission from hydrogen-like xenon ions with high precision. The contribution will present results from this test as well as perspectives for a detector with 100 detector pixels.

Primary author: KRAFT-BERMUTH, Saskia (I.Physics Institute, Justus-Liebig-University, Giessen, Germany)

Co-authors: ECHLER, Artur (GSI, Darmstadt); Mr MUELL, Damian (I.Physics Institute, Justus-Liebig-University, Giessen, Germany); Dr KISELEV, Oleg (GSI, Darmstadt); Mr SCHOLZ, Pascal (Universitaet Giessen); EGELHOF, Peter (GSI, Darmstadt); ANDRIANOV, Victor (Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow, Russia)

Presenter: KRAFT-BERMUTH, Saskia (I.Physics Institute, Justus-Liebig-University, Giessen, Germany)

Session Classification: Posters

Track Classification: Instrumentation