MATTER AND TECHNOLOGIES

Contribution ID: **125** Type: **Poster**

The progress in x-ray Compton-polarimetry for Atomic Physics at GSI/FAIR

Since almost two decades the atomic physic department of GSI and the detector lab of the IKP of the Forschungszentrum Jülich have a very successful collaboration on the design and development of structured planar multichannel HPGe- and Si(Li)- detector systems with position-, time-, and energy resolution. All detector sensors and systems were processed and built at the detector lab at IKP. Employing these systems as Compton polarimeters opens a unique inside into the dynamics of atomic processes in highly charged heavy ions by experiments at the accelerator facility GSI and also synchrotron facilities.
The continuous technological developments during this time have resulted in detector systems with the ability to determine the linear polarization of an x-ray source, e.g. an ion beam interacting with a target, with high precession (on the level of 1% and below) covering an energy range from 40 keV up to 400/500 keV.
With the new experiment challenges coming up with the FAIR project, especially the physics program of the SPARC collaboration at HESR, we will extent the measurement range for the linear polarization up to 1 MeV and beyond. For these physics applications we now focus on the development of a detector system produced from two thick position and energy sensitive planar semiconductor detectors in telescope configuration.
In our poster we present a comprehensive overview of the past work and discuss our current and future activities on the Compton telescope system.

Primary authors: Mr KRINGS, Thomas (IKP, FZ Jülich); Prof. STÖHLKER, Thomas (GSI Helmholtzzentrum, Helmholtz Institut Jena, IOQ Universität Jena); Dr SPILLMANN, Uwe (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

Co-authors: Dr GUMBERIDZE, Alexandre (GSI); HAHN, Christoph (Helmholtz Institute Jena); Dr PROTIC, Davor (IKP, FZ Jülich); Dr WEBER, Günter (Helmholtz Institut Jena); Dr KOCH, Karsten (GSI Darmstadt); Mr HERDRICH, Marc Oliver (Helmholtz Institut Jena); Mr VOCKERT, Marco (Institut für Optik und Quantenelektronik, Friedrich-Schiller-Universität Jena); Dr KURZ, Nikolaus (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

Presenters: Mr KRINGS, Thomas (IKP, FZ Jülich); Dr SPILLMANN, Uwe (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

Track Classification: DTS