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PEGASUS: An Intense Spin-Polarized Electron-Beam Source

Monday, 19 September 2016 18:00 (2 hours)

The PEGASUS project at GSI aims at providing an intense and portable spin-polarized electron beam for experiments in crossed- and merged-beams arrangements at various ion-beam facilities. Electron energies will range from 1 to 10 keV at electron currents up to 100 μA. Laser induced electron emission from GaAs photocathodes with a state of negative electron affinity will be utilized for beam generation. With a set of electrostatic lenses and benders, the electrons will be transported to the interaction zone. Wien-filters will be used for controlling the spin orientation. The experiment has been designed to be transportable such that it can be used in different places for different experiments, for example as a user experiment at storage rings or as a stand-alone installation coupled with diagnostic elements. Currently planned first experiments comprise the investigation of asymmetries in nonradiative electron capture to continuum at CRYRING at GSI and the measurement of the circular dichroism in collisions of spin polarized electrons with chiral molecules using an ESA22 electron spectrometer.

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