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The EDM Polarimeter Development at COSY-Jülich —
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The JEDI (Jülich Electric Dipole moment Investigations) collaboration performs a set of experiments at the COSY storage ring in Jülich, within the R&D phase to search for the Electric Dipole Moments (EDMs) of charged particles. A measurement of proton and deuteron EDMs is a sensitive probe of yet unknown CP violation. The method of charged particle EDM search will exploit stored polarized beams in order to observe a miniscule rotation of the polarization axis as a function of time due to the interaction of a finite EDM with large electric fields. Key challenge is the provision of a sensitive and efficient method to determine the tiny change of the beam polarization. Elastic scattering of the beam particles on carbon nuclei will provide the polarimetry reaction. To perform these measurement, an EDM polarimeter needs to be developed. The polarimetry concept developed within the JEDI collaboration is based on a heavy crystal (LYSO) hadron calorimeter. LYSO as a fast, dense and radiation hard, novel scintillating material was chosen to fulfill these specifications. The polarimeter is designed in a compact and modular fashion consisting of modules made from LYSO crystals coupled to silicon photomultipliers (SiPM). This setup has been tested at COSY in a deuteron beam with five different energies from 100 MeV up to 270 MeV. The preliminary results of this measurements will be presented.

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