

LYSO Crystal Testing for an EDM Polarimeter

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The (JEDI) Jülich Electric Dipole moment Investigations collaboration aims to measure tiny polarization changes over a long period of time (see talk by I. Keshelashvili). In the following presentation, the results of beam tests of the new developed LYSO modules for the future polarimeter will be presented. For the tests, four detector modules have been built. The first version of this modules was built using dual channel PMTs. For this beam time at COSY, three different types and two sizes of LYSO crystals from Saint-Gobain and EPIC-Crystals were studied. In a second step, one PMT readout has been replaced by an array of silicon photomultipliers (SiPMs). The SiPM array was read out first, using an OpAmp based pre-amplifier and second, the directly summed signal from the decoupled output of the array. Both versions of the modules have been tested in a deuteron beam with five different energies from 100 MeV up to 270 MeV. The preliminary results of the energy resolutions, the deuteron reconstruction efficiency as well as the energy calibration will be presented.

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