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Design of a precise 5 MeV Mott polarimeter operating at high average current

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A high intensity polarised beam has to be delivered to the P2 experiment at Mainz Energy Recovering Superconducting Accelerator Facility (MESA). The absolute error of the beam polarisation should be $\leq 0.5\%$. To track the polarisation, a Mott polarimeter will be installed after the pre-acceleration of the polarised beam to 5 MeV energy. The goal of this work is to deploy a 5 MeV Mott polarimeter for high polarised beam current $\approx 100 \mu\text{A}$ with $\approx 0.5\%$ precision. For that, feasible geometries and the detection system are under investigation based on 5 MeV Mott polarimeter from Jefferson Lab and 3.5 MeV Mott polarimeter from Mainz.

Category

Polarimetry

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