MT26 Abstracts, Timetable and Presentations



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Thu-Mo-Po4.07-02 [47]: Transverse field measurements in a bulk superconducting Magnetic Shell for a CLAS12 Target at Jefferson Lab

Thursday, 26 September 2019 08:45 (2 hours)

Prototype tests are underway to study the feasibility of using a bulk magnetic system to maintain a transversely polarized target within the longitudinal solenoid of the CLAS12 detector, during an experiment to measure transverse spin effects in semi-inclusive deep inelastic scattering (SIDIS) at 11 GeV. The experiment has been approved with the highest priority rating at Jefferson Lab. The main CLAS12 detector solenoid would be operated with a maximum magnetic induction of 2 T. A bulk MgB2 cylinder cooled in liquid helium is proposed both to shield this longitudinal field as well as to provide a transverse field induction up to 1.2 T to maintain the orientation of a solid hydrogen deuteride (HDice) polarized target. A test setup to measure the transverse magnetization of a MgB2 bulk cylinder cooled by a coldhead has been developed. Transverse field measurements have been performed over a wide range of temperatures in two configurations, cooling past the critical point in the presence of an external field to trap a transverse field within the MgB2, and shielding an external field that is applied after cooling. Results of these studies will be discussed.

Primary authors: STATERA, Marco (INFN Milano - LASA); Dr BARION, Luca (INFN Ferrara); CIULLO, Giuseppe (Universita e INFN, Ferrara (IT)); CONTALBRIGO, Marco (INFN - National Institute for Nuclear Physics); LENISA, Paolo (Univers); SANDORFI, Andrew (Jefferson Lab); Dr LOWRY, Michael (JLAB); Dr SPIZZO, Federico (Ferrara university); BALOSSINO, Ilaria (INFN Ferrara); Dr DEL BIANCO, Lucia (Ferrara University)

Presenter: STATERA, Marco (INFN Milano - LASA)

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