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A New Target Polarization Measurement System for the Fermilab Polarized Drell-Yan SpinQuest Experiment

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The Liverpool Q-meters were developed in the late 70s and became a de facto industry standard for NMR-based polarization measurements of polarized solid targets. However, it is becoming increasingly more difficult to produce the required number of q-meter channels as the components have become obsolete. The Los Alamos National Laboratory (LANL) group has developed a new NMR-based polarization measuring system following the basic Liverpool design. The new Q-meter will have multiple improvements, such as remote tuning and compact design. These improvements present opportunities for achieving a higher figure of merit for experiments exploiting polarized solid targets by potentially increasing the accuracy of the polarization measurements. The new LANL Q-meter is intended to be used in Fermilab SpinQuest/E1039 experiment which is part of the continuing world-wide effort to shed light on the nucleon spin composition puzzle. The current status of this work will be presented.

Summary

Primary author: YUROV, Mikhail (Los Alamos National Laboratory)

Presenter: YUROV, Mikhail (Los Alamos National Laboratory)

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