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Contribution ID: **3883** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) The Main Detector System for the MOLLER Experiment

Tuesday 20 June 2023 10:00 (15 minutes)

The MOLLER (Measurement Of a Lepton Lepton Electroweak Reaction) experiment, in preparation at Jefferson Lab, aims to constrain physics beyond the Standard Model using parity-violating Moller scattering at 11 GeV. The parity-violating asymmetry between the cross-sections for right- and left-handed helicity beam electrons scattered from the atomic electrons in a liquid hydrogen target is expected to be 35.6 ppb and MOLLER aims for 0.73 ppb precision. The measured asymmetry will be used to determine the weak charge of the electron to a fractional accuracy of 2.4%. Among the most challenging aspects of the experiment will be the detection of the small asymmetry in the detector signal. To prepare for production running, we must fully characterize the MOLLER main detector system through a combination of simulation and beam tests. This talk will provide an overview of the main detector system with a focus on radiation testing of our integrating electronics.

Keyword-1

Weak Interaction

Keyword-2

Precision Electron Detectors

Keyword-3

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