



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 4137

Type: **Invited Speaker / Conférencier(ère) invité(e)**

The MOLLER Experiment

Tuesday 28 May 2024 16:15 (30 minutes)

The MOLLER experiment is a >\$40M USD experiment expected to run in 2026. This experiment has a large Canadian contribution, to both the spectrometer and detector systems. The experiment utilizes parity-violation in the weak interaction to measure the asymmetry between longitudinally polarized electrons in the positive and negative helicity states. The electrons scatter from electrons in liquid hydrogen, are collimated and bent through the spectrometer system to the main detector array. There are 224 integrating quartz detectors in the array. In addition there are a set of tracking detectors to study backgrounds and determine the acceptance. In fact, the whole accelerator is part of the experiment, with beam position and charge monitors throughout the beamline serving to study helicity-correlated backgrounds. In this talk I will describe the goals of the MOLLER experiment and its design and provide a status, in particular of the spectrometer and detector systems.

Keyword-1

weak interaction

Keyword-2

electron scattering

Keyword-3

beyond the Standard Model phys

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Session Classification: (DNP) T3-4 Hadron physics | Physique des hadrons (DPN)

Track Classification: Technical Sessions / Sessions techniques: Nuclear Physics / Physique nucléaire (DNP-DPN)