

Abstract Submitted
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Polarized Electron Source for the MOLLER Experiment CARYN

PALATCHI, University of Virginia — The MOLLER experiment at Jefferson Laboratory will be part of a new generation of ultra high precision electroweak experiments. It will measure the Moller (electron-electron scattering) parity-violating asymmetry, providing an unprecedented precision on the electroweak mixing angle. To achieve such small uncertainties, innovative techniques in the electron source are required to switch the beam helicity more quickly than previously achievable. The key technology is the Pockels cell in the laser optics of the polarized electron source. RTP crystals, which do not suffer from piezo-electric ringing, have been demonstrated to achieve almost an order of magnitude faster transition times than commonly used KD*P crystal cells. This talk will detail the design modifications made to the RTP cell in order to achieve beam quality which is comparable to traditional KD*P controlled accelerator beams. The specific challenges for this use of the RTP system, including laser and crystal constraints, will be discussed.

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