

Abstract Submitted
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Neutron Spin Rotation Measurement¹ CHURAMANI PAUDEL,
Georgia State University (For NSR Collaboration) — The neutron spin rotation (NSR) collaboration used Parity-violating spin rotation of transversely polarized neutrons Transmitted through a 0.5 m liquid helium target to constrain weak coupling constants between nucleons. While consistent with theoretical expectation, the upper limit set by this measurement on the rotation angle, $d\phi/dz = [+1.7 \pm 9.1(\text{stat.}) \pm 1.4(\text{sys.})] \times 10^{-7}$ rad/m, is limited by statistical uncertainties. The NSR collaboration is preparing a new measurement to improve this statistically limited result by about an order of magnitude. In addition to using the new high-flux NG-C beam at the National Institute of Standards and Technology (NIST) Center for Neutron Research, the apparatus is being upgraded to take advantage of the Larger-area and more divergent NG-C beam. In addition, significant improvements have been made to the cryogenic design and the He-3 ion chamber. Details of these improvements and readiness of the upgraded apparatus will be discussed.

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