Abstract Submitted
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Modeling Systematic Error Effects for a Sensitive Storage Ring EDM Polarimeter[1] EDWARD STEPHENSON, Indiana University, ASTRID IMIG, BNL, STORAGE RING EDM COLLABORATION — The Storage Ring EDM Collaboration has obtained a set of measurements detailing the sensitivity of a storage ring polarimeter for deuterons to small geometrical and rate changes. Various schemes, such as the calculation of the cross ratio [1], can cancel effects due to detector acceptance differences and luminosity differences for states of opposite polarization. Such schemes fail at second-order in the errors, becoming sensitive to geometrical changes, polarization magnitude differences between opposite polarization states, and changes to the detector response with changing data rates. An expansion of the polarimeter response in a Taylor series based on small errors about the polarimeter operating point can parametrize such effects, primarily in terms of the logarithmic derivatives of the cross section and analyzing power. A comparison will be made to measurements obtained with the EDDA detector at COSY-Jülich.

[1] G.G. Ohlsen and P.W. Keaton, Jr., NIM **109**, 41 (1973).

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Edward Stephenson
Indiana University

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