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Precision Optics Optimization for GMp Experiment YANG WANG, The College of William and Mary, KALYAN ALLADA, Massachusetts Institute of Technology, TODD AVERETT, The College of William and Mary, ERIC CHRISTY, Hampton University, CHAO GU, University of Virginia, MIN HUANG, Duke University, BOGDAN WOJTSEKHOWSKI, Thomas Jefferson National Accelerator Facility, GMP COLLABORATION — The GMp experiment aims to improve the precision on the elastic e-p cross section measurement to 2%; up to a factor of 5 better than previous measurements, with four-momentum transfer up to 14 GeV^2 using the High Resolution Spectrometers (HRS) of Hall A at Jefferson Lab. These measurements will be an important benchmark for many other cross section measurements in hadron physics. To reach this goal, it is necessary to improve the precision of many instrument systems. Knowledge of the magnetic optics of HRS is critically important for precision reconstruction of the momentum and coordinates of the scattered particles at the interaction vertex. In this talk, an improved optimization method for optics will be presented in detail and the results of a study based on recent commissioning data in 2014 will be discussed.

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