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**Development of Green Laser Cavity for Precision Compton Polarimetry in Jefferson Lab Hall A** ABDURAHIM RAKHMAN, Syracuse University, Syracuse, NY 13244, SIRISH NANDA, Thomas Jefferson National Accelerator Facility, Newport News, Virginia 23606, PAUL SOUDER, Syracuse University, Syracuse, NY 13244, HAPPEX/PREX COLLABORATION — Many experiments at Jefferson Lab require good knowledge of the polarization of the electron beam. The Pb Radius Experiment (PREx) demands polarization measurement of a lower energy (1.0 GeV) electron beam at 1.0 % accuracy, which can not be achieved by the infra-red (1064 nm) laser Compton polarimeter presently operating in Hall A. Therefore a green laser (CW, 532 nm) based Fabry-Pérot cavity for upgraded high precision Compton Polarimetry has been proposed and under development. The system used as a high energy polarized photon target for measuring the polarization of a low- to high-energy (1.0 GeV  $\sim$  11.0 GeV) electron beam in a nondestructive manner. Our goal is to amplify a low power laser beam to achieve 1.5 kW of intra cavity power to improve signal to noise ratio of the polarimeter. We locked our test cavity to a frequency doubled Nd:YAG tunable narrow linewidth laser using the Pound-Drever-Hall (PDH) technique. The recent progress and future plan of this project will be presented.

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