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Prompt photon measurements with the PHENIX MPC-EX detector SARAH CAMPBELL, Iowa State University, PHENIX COLLABORATION, MPC-EX TEAM — The MPC-EX detector is a preshower extension to PHENIX's Muon Piston Calorimeter (MPC). It consists of eight layers of alternating W absorber and Si mini-pad sensors. Located at forward rapidity, $3.1 < |\eta| < 3.8$, the MPC and MPC-EX access low-x partons in the Au nucleus in p+Au collisions and high-x partons in the projectile in polarized p+p collisions. With the MPC-EX, photon and π^0 separation extends to $E > 80$ GeV, allowing the measurement of prompt photons using the double ratio method. At forward rapidities, prompt photons are dominated by direct photons produced by quark-gluon Compton scattering. In transversely polarized p+p collisions, the prompt photon single spin asymmetry measurement, A_N , will resolve the sign discrepancy between the Sivers and twist-3 extractions of A_N . In p+Au collisions, the prompt photon R_{pAu} will quantify the level of gluon saturation in the Au nucleus at low-x, 10^{-3} , with a projected systematic error band a factor of four smaller than EPS09's current allowable range. The MPC-EX detector will expand our understanding of gluon nuclear parton distribution functions, providing information about the initial state of heavy ion collisions, and clarify how valence parton's p_T and spin correlate to the proton spin.

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