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Trigger Upgrade of PHENIX Muon Arms for Polarized Sea Quark Measurement and Background Study at $\sqrt{s}=500$ GeV ITARU NAKAGAWA, RIKEN, PHENIX COLLABORATION — Parity-violating production of the W boson with longitudinally polarized protons at RHIC provides a direct measure of the individual polarizations of the quarks and anti-quarks in the colliding protons. The high energy scale set by the W-mass makes it possible to extract quark and anti-quark polarizations from inclusive lepton spin asymmetries in W-production with minimal theoretical uncertainties. This program thus will break new ground in our detailed understanding of the proton's structure. The program was initiated by the first operation of RHIC polarized proton beams at its highest operational energy $\sqrt{s} = 500$ GeV. A new trigger on forward muons in PHENIX identifies and triggers on high momentum muons from W decay suppressing a large number of background low momentum muons coming from hadronic decays. In this talk, I will update the installation and commissioning status of the new trigger electronics and discuss about the observed background conditions at 500 GeV from Run09 data.

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