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Study of $b\bar{b}$ production in $p + p$ collisions at $\sqrt{s} = 510$ GeV in the PHENIX experiment at RHIC TRISTAN HASELER, Georgia State Univ, PHENIX COLLABORATION — Heavy flavor quarks are an important probe of the initial state of the Quark Gluon Plasma formed in heavy-ion collisions. Bottom and charm quarks are produced early in the collision, primarily through hard interactions, and experience the full time evolution of the medium. Understanding bottom quark production in $p + p$ collisions gives a baseline reference for studying larger collision systems. The measurement of the $b\bar{b}$ cross section gives insight into b quark production mechanisms which can directly test pQCD predictions. The $b\bar{b}$ signal can be isolated by taking advantages of B^0 oscillations in like-sign muon pairs with invariant mass of 5-10 GeV. Measuring like-sign dimuons within this mass range provides an enriched bottom signal with a minimal amount of open charm background and without any contributions from quarkonia or Drell-Yan pairs. $b\bar{b}$ will be measured through the semi-leptonic decay like-sign dimuon signal, in the rapidity range $1.2 < |y| < 2.2$ and at $\sqrt{s} = 510$ GeV from data recorded in 2013 at the PHENIX experiment. In this presentation, the status of the $b\bar{b}$ production study will be presented.

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