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Heavy Quarkonia Production in p+p collisions from the PHENIX Experiment

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Quarkonia provide a sensitive probe of the properties of the hot dense medium created in high energy heavy ion collisions. Hard scattering processes result in the production of heavy quark pairs that interact with the collision medium during hadronization. These in-medium interactions convey information about the fundamental properties of the medium itself and can be used to examine the modification of the QCD confining potential in the collision environment. Baseline measurements from p+p and d+Au collision systems are used to distinguish cold nuclear matter effects while measurements from heavy ion collision systems are used to quantify in-medium effects. The PHENIX experiment has the capability of detecting heavy quarkonia at forward rapidity ($1.2 < |\eta| < 2.2$) via the $\mu^+\mu^-$ decay channel and at mid-rapidity ($|\eta| < 0.35$) via the e^+e^- decay channel. Recent runs have resulted in the collection of high statistics p+p data sets that provide an essential baseline reference for heavy ion measurements and allow for further critical evaluation of heavy quarkonia production mechanisms. The latest PHENIX results for the production of the J/ψ , χ_c and Υ in p+p collisions will be presented. In light of the newly available reference data, the implications of the J/ψ results in the d+Au collision system on cold nuclear matter effects will be revisited. Furthermore, the χ_c data will be examined to establish the baseline feed-down contribution.