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**Heavy Quarkonia Production in High Energy Heavy Ion Collisions at RHIC and Perspectives for  
the LHC**

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High energy heavy ion collisions has been performed at RHIC to search for the new state of QCD matter and to study its properties. Quarkonia ( $J/\psi$ ,  $\psi'$ ,  $\chi_c$ ,  $\Upsilon$ ) have long been considered as one of the most promising probes for the deconfinement of the hot and dense QCD matter, since the attraction between heavy quark and anti-quark pairs is predicted to be reduced in the medium due to the color screening. Quarkonia production has been measured in  $p + p$ ,  $d+\text{Au}$ ,  $\text{Cu}+\text{Cu}$  and  $\text{Au}+\text{Au}$  collisions at RHIC to understand the production process, the cold nuclear matter effects that modify the quarkonia production in nuclear environment as well, and the hot and dense medium effects such as color screening, thermal gluon dissociation, and regeneration of quarkonia from uncorrelated heavy  $q\bar{q}$  pairs. Recent experimental and theoretical progress to understand the observed  $J/\psi$  suppression at RHIC will be present, issues for the future quarkonia measurement at RHIC and perspectives for the upcoming LHC will be present in this talk.