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Hidden and open heavy flavor production at $\sqrt{s} = 200$ GeV in PHENIX

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Heavy flavor production is a sensitive probe of all stages in the evolution of a heavy ion collision system. The characterization of the relative weights of the corresponding mechanisms (like energy loss or suppression by collisions with initial partons or comovers) requires a detailed description of the production, from $p+p$ and $p+A$ to $A+A$ collisions. Heavy quarkonia could also be direct probes of quark deconfinement in $A+A$ collisions.

The unique versatility and increasing performance of the BNL/RHIC collider has provided several beam and target combinations at $\sqrt{s} = 200$ GeV to study heavy flavor production and modification. Also, improvements of the PHENIX experiment allow deeper study than has been previously published.

This talk aims at presenting the most recent PHENIX results on J/ψ , ψ' and open charm and beauty productions at $\sqrt{s} = 200$ GeV in several collision systems and focus on the additional degrees of freedom in $p+A$ and $A+A$ collisions have compared to $p+p$ collisions.

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