



Contribution ID: 111

Type: Talk

## Quarkonia and heavy flavors latest PHENIX results

*Tuesday, 23 July 2013 10:00 (30 minutes)*

Heavy quarks and quarkonia are mostly produced in the first steps of a collision, and then are sensitive to the whole evolution of the system, and in particular to the initial stage, which makes also of the heavy quarkonia an excellent probe of the quark gluon plasma formation in heavy ion collisions. Other effects also occur, such as partonic distributions modification in cold nuclear matter, and a multidimensional description is necessary to get a sufficient set of equations to disentangle the various contributions. In particular, the characterization of the production processes in p-p and p or d induced collisions with ions is critical in the extraction of the additional ion-ion collisions effect.

The Relativistic Heavy Ion Collider has been delivering the widest range of systems and energies, from p-p to Au-Au through d-Au and Cu-Au, from 7.6 to 200 GeV (n-n collision), allowing the PHENIX experiment to start to explore these various experimentally available dimensions, also versus rapidity and transverse momentum, for open and hidden charm and beauty.

Recent PHENIX results of their production through single lepton or pairs of leptons, including J/psi, psi prime, Chi\_c, Upsilon, open charm and beauty, will be presented.

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**Session Classification:** Plenary 4