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System Size Dependence of Heavy Flavor and Quarkonia Production at RHIC

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Particles carrying heavy flavor are important probes to study the properties of the Quark-Gluon Plasma (QGP) created in relativistic heavy-ion collisions at RHIC. They are produced in hard scattering during the earliest stages of nuclear collisions and, because of their high mass, theoretical calculations are more tractable than those involving light quarks. The RHIC experiments have collected data on p+p, p+Al, p+Au, Cu+Au and Au+Au collisions using silicon vertex trackers with sufficient tracking resolution, in combination with lepton-identification detectors. They have provided results on charm and bottom open heavy flavor production, as well as Jpsi/Psiprime ratios and B-to-Jpsi decays. The results on a broad range of systems guide our understanding of the properties of the QGP.

This talk summarizes the latest RHIC experiments' results concerning open and closed charm and beauty heavy quark production measured through their semileptonic decays as a function of system size, rapidity and energy, and their interpretation with respect to the current theoretical understanding on this topic.

Primary author: Dr NOUICER, Rachid (Brookhaven National Laboratory (BNL, USA))

Presenter: Dr NOUICER, Rachid (Brookhaven National Laboratory (BNL, USA))

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