

10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



Contribution ID: 293

Type: Poster Presentation

PHENIX results on quark flavor dependence of flow in Au+Au collisions

Tuesday, June 2, 2020 7:30 AM (1h 20m)

An outstanding puzzle in heavy ion physics is the mechanism that generates collective motion of heavy quarks (charm and bottom) in large collision systems. The measured azimuthal anisotropy coefficient v_2 of electrons from heavy quarks closely resemble those of light quarks, despite the several orders of magnitude differences in quark mass. In order to further understand the quark mass dependence of the flow, we have measure v_2 of electrons from charm and bottom quark decays separately. In contrast to the apparent heavy quark flow, attempts to measure the J/ψ , a charmonium state, have so far only yielded results consistent with zero. Consistent understanding of the results will need results with better precision as well as comparisons with models including quark recombination process. We will present v_2 vs p_T of J/ψ and of electrons originating from charm and bottom decays measured at mid-rapidity in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. Implications for the origins of collective motion of heavy quarks and quarkonia will be discussed.

Collaboration (if applicable)

PHENIX

Track

Heavy Flavor and Quarkonia

Contribution type

Contributed Talk

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Session Classification: Poster session

Track Classification: Heavy Flavor and Quarkonia