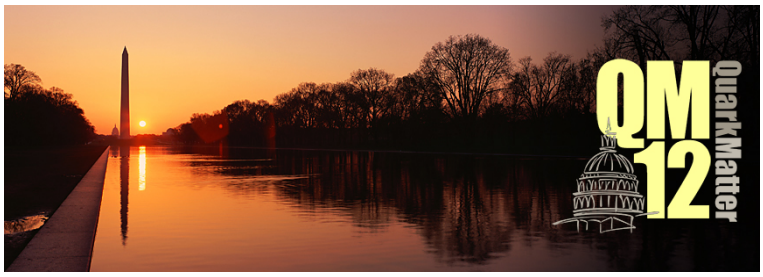

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Heavy quark evolution and flow in hot and dense medium

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Heavy quarks serve as valuable probes of the transport properties of the quark-gluon plasma created in relativistic heavy-ion collisions. Within the framework of a Langevin approach, coupled to a realistic 3D hydrodynamic calculation of the medium, we study the heavy quark energy loss due to quasi-elastic multiple scatterings. We extend this algorithm to include medium-induced gluon radiation in hot and dense nuclear matter. Within this new and improved approach, we perform a detailed analysis of various ingredients affecting the final heavy flavor spectra and elliptic flow, such as the coupling strength between heavy quarks and the medium, the medium's geometric anisotropy and its flow profile, and the relative contributions from charm and bottom quarks. We demonstrate the consistency between these properties and our previous study of the thermalization behavior of heavy quarks inside the QGP. We also present simulations of heavy flavor quenching and elliptic flow, including both collisional and radiative energy loss, for RHIC and LHC experiments.

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