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Langevin + Hydrodynamics Approach to Heavy Quark Diffusion in the Quark Gluon Fluid YUKINAO AKAMATSU, TETSUO HATSUDA, TETSUFUMI HIRANO, University of Tokyo — Relativistic Langevin dynamics is developed under the background of hydrodynamic expansion of strongly interacting quark-gluon fluid. The drag force acting on charm and bottom quarks is parametrized according to the formula calculated by AdS/CFT correspondence. In this setup, we calculate the nuclear modification factor R_{AA} for the single electrons from the charm and bottom quarks to extract the magnitude of the drag force from the PHENIX and STAR data. The R_{AA} for electrons with high transverse momentum indicates that the drag force is much stronger than the leading order perturbative QCD prediction and is rather close to the AdS/CFT prediction. Effects of the drag force to the elliptic flow v_2 of single electrons will be also discussed. This approach is further applied to the study of heavy quark correlation. We will report our recent prediction of the electron-muon and electron-hadron correlations, which are closely related to the dynamical properties of heavy quark in the hot medium.

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