

# A fluid-dynamic approach to heavy-quark diffusion in the quark-gluon plasma

Tuesday, 15 November 2022 12:00 (20 minutes)

Heavy quarks (i.e. charm and beauty) are powerful tools to characterize the quark-gluon plasma (QGP) produced in heavy-ion collisions. Although they are initially produced out of kinetic equilibrium via hard partonic scattering processes, recent measurements of anisotropic flow of charmed hadrons [1] pose the question regarding the possible thermalization of heavy quarks in the medium. Our recent work [2] provides new insights on the level of thermalization of charm and bottom quarks in the QGP. In particular, exploiting a mapping between transport theory and fluid-dynamics, we will show how a fluid-dynamic description of the dynamics of charm quarks in the QCD plasma is feasible. Ongoing work concerning the coupling of a heavy-quark conserved current with a hydrodynamic code simulating the QGP phase (Fluidum [3]) to obtain charmed hadron spectra and flow coefficients will be shown.

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[1] PLB 813 (2021) 136054

[2] e-print [2205.07692]

[3] Phys. Rev. C 100, 014905 (2019)

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