

# COST Workshop on Interplay of hard and soft QCD probes for collectivity in heavy-ion collisions

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## Dynamical description of heavy-ion collisions

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We present the basic ideas of the Parton-Hadron-String Dynamics (PHSD) transport approach which is a microscopic covariant dynamical model for strongly interacting systems formulated on the basis of Kadanoff-Baym equations for Green's functions in phase-space representation (in 1st order gradient expansion beyond the quasi-particle approximation). The approach consistently describes the full evolution of a relativistic heavy-ion collision from the initial hard scatterings and string formation (based on LUND string model) through the dynamical deconfinement phase transition to the strongly-interacting quark-gluon plasma (sQGP) as well as hadronization and the subsequent interactions in the expanding hadronic phase. The PHSD approach has been applied to p+p, p+A and A+A collisions from lower SIS to LHC energies and been successful in describing a large number of experimental data including single-particle spectra, collective flow and electromagnetic probes. The highlights of the PHSD results will be presented with the focus on charm production.

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