

Dimuon radiation at the CERN SPS within a hybrid evolution model

In this talk I discuss dilepton emission from hot and dense matter created in heavy-ion collisions and present results on dimuon invariant and transverse mass spectra obtained using a hybrid approach based on the UrQMD transport model with an intermediate hydrodynamic stage for the modeling of heavy-ion dynamics. During the hydrodynamic stage, the production of lepton pairs is described by radiation rates for a strongly interacting medium in thermal equilibrium. In the low mass region, hadronic thermal emission is evaluated assuming vector meson dominance including in-medium modifications of the rho meson spectral function through scattering from nucleons and pions in the heat bath. In the intermediate mass region, the hadronic rate is essentially determined by multi-pion annihilation processes. Emission from quark-antiquark annihilation in the quark gluon plasma is taken into account as well. When the system is sufficiently dilute, the hydrodynamic description breaks down and a transition to a final cascade stage is performed. In this stage dimuon emission is evaluated as commonly done in transport models. Focusing on the enhancement with respect to the contribution from long-lived hadron decays after freezeout observed at the SPS in the low mass region of the dilepton spectra, the relative importance of the different thermal contributions and of the two dynamical stages is discussed.

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Track Classification: Electromagnetic probes