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Jet quenching and elliptic flow in heavy ion collisions at RHIC and LHC within a pQCD-based partonic transport model

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We present fully dynamic simulations of heavy ion collisions at RHIC and at LHC energies within the perturbative QCD-based partonic transport model BAMPS (Boltzmann Approach to Multi-Parton Scatterings). We focus on the simultaneous investigation of high-pT observables, such as jet quenching, and bulk observables, such as the elliptic flow. The model features inelastic 2 <-> 3 processes based on the Gunion-Bertsch matrix element and has recently been extended to include light quark degrees of freedom. This allows for direct comparison to hadronic data on the nuclear modification factor via a fragmentation scheme for high-pT partons and also allows for the discussion of elliptic flow results in terms of a quark recombination picture. We present results on the nuclear modification factor of neutral pions at different centralities for Au+Au collisions at RHIC energies and compare to experimental data. First results on the nuclear modification of charged hadrons in central Pb+Pb collisions at the LHC are also presented and compared to recent ALICE data. Furthermore the differential elliptic flow of gluons and quarks as well as the centrality dependence of the integrated elliptic flow is studied within the same framework for Au+Au at RHIC and Pb+Pb at LHC.

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