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Pre-equilibrium dynamics of heavy ion collisions based on hadronic transport

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We present a systematic study of the pre-equilibrium dynamics of relativistic heavy-ion collisions using the microscopic transport model SMASH. We focus on the time evolution of the distributions of energy-momentum currents and three types of conserved charges, produced by string excitation and fragmentation at intermediate and high energies. We address their dependence on the system size and collision energy by analyzing (Au, Cu, d)+Au collisions at $\sqrt{s_{\rm NN}} = 19.6$ GeV and 200 GeV. The space-time and momentum correlations for net baryon, strangeness, and electric charges are studied as a function of the longitudinal proper time. Especially, we investigate the spectators' contributions to the conserved charge distributions within this transport approach. The rapidity decorrelations of initial eccentricities, initial orbital angular momentum, and vorticity tensor distributions are studied as functions of centrality for those collisions.

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