Nonequilibrium distribution functions of nucleons in relativistic nucleus-nucleus collisions

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The collision smearing of the nucleon momenta about their initial values during relativistic nucleus-nucleus collisions is investigated. Our model belongs, to a certain degree, to the transport one; we investigate the evolution of the nucleon system created in nucleus-nucleus collision, but we parameterize this development by the number of collisions of every particle during evolution rather than by the time variable. It is assumed that the group of nucleons which leave the system after the *same* number of collisions can be joined in a particular statistical ensemble. We argue that the nucleon momentum transfer after several nucleon-nucleon (-hadron) elastic and inelastic collisions becomes a random quantity driven by a proper distribution. This randomization results in a partial isotropization and thermalization of the nucleon system. The nucleon nonequilibrium distribution functions which depend on a certain number of collisions of a nucleon before freeze-out is derived in the framework of the proposed rescattering-statistical model.