

Time Evolution of Fast Particles During Decay of Hadronic Systems

M. T. HUSSEIN

Department, Faculty of Science, Cairo University, 12613 Giza, Egypt

N. M. HASSAN

Physics Department, Faculty of Science, Fayoum University
Fayoum, Egypt

nabilamh@hotmail.com

nmh00@favoum.edu.eg

Naglaa El-HARBY

Physics Department, Faculty of Education for girls, Boghdadia, Jeddah, KSA. [N.M. Hassan](#)

Abstract:

A phenomenological model is presented based on the formation of a nuclear thermodynamic system during the collision of intermediate and high energy heavy ions. The formulation and the dynamic picture are determined by solving the Vlasov equation. The solution is dressed in the form of a power series the first term of which being the equilibrium distribution in phase space. The rest, are time dependent perturbation terms due to the multiple strong interactions inside the system. The temperature gradient and the derivatives of the phase function are calculated. The time dependence of the angular emission of the produced particles is studied. It is found that particles emitted in the forward direction are produced in the early stage of the reaction, far from the equilibrium. Backward production comes in a later stage when the system constituents undergo multiple cascade collisions.

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