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Thermal multifragmentation in C + Au interactions at 22 GeV incident energies

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The analysis of charge distribution (Fig. 1) of intermediate mass fragments (IMF) was performed for interaction of 22 GeV carbon projectiles with a gold terget. The main behavior of charge distribution is well described by a power low with a power function exponent equal to 2.16 ± 0.03. The power law distribution follows from the classical droplet Fisher model [1], which predicts this behavior of the liquid droplet sizes with the power function exponent equal to 2-3 at the critical point. Experimental data are well described by a combined model INC [2] + SMM [3].

The relative angle correlation of IMF has been studied for ^{12}C + Au collisions at 22 GeV. Strong suppression at small relative angles is observed caused by Coulomb repulsion of fragments. The time scale for IMF emission is estimated by comparison the measured correlation function to that obtained by the multi-body Coulomb trajectory calculations with time as a parameter. The analysis has been done on an event-by-event basis. The mean decay time of fragmenting system is found to be less than 59 ± 10 fm/c.

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Fig. 1. Charge distribution of IMF produced in C + Au collisions at 22 GeV. Points - experimental data. Solid line - INC + SMM calculations.

1. M.E. Fischer, Physics **3,** 255 (1967)
2. V.D. Toneev *et al.*, Nucl. Phys. A **519,** 463 (1990).
3. J. Bondorf *et al.*, Phys. Rep. **257,** 133 (1995).
4. V.V. Kirakosyan *et al.*, Instrum. Exp. Tech. **51,** 159 (2008).

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