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Hot nuclei in collisions of light relativistic beams of the Nuclotron accelerator (JINR, Dubna) with a heavy target

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The study of the multifragmentation process gives experimental information about the nuclear spinodal region. The experiment has been performed with the 4pi-setup FASA [1], installed on the external beam of the superconducting accelerator Nuclotron in Dubna.
The relative angle correlations of intermediate mass fragments have been studied for the 12C + Au collisions at 22 GeV. Strong suppression at small angles is observed which is due to the Coulomb repulsion of fragments. The experimental correlation function was compared to that obtained by the multibody Coulomb trajectory calculations via intranuclear cascade (INC) [2] followed by the statistical multifragmentation model (SMM) [3] with the various decay time of fragmenting system. It is found that the average decay time of fragmenting system is less than 59 ± 11 fm/c.
The kinetic energy spectra were measured and analyzed for d(4.4 GeV) + Au collisions. The analysis has been done via INC+SMM model. It was found good agreement of measured and calculated kinetic energy spectra including a radial flow. The flow velocity of the system decreases as the charge of fragment increases. It means that heavier fragments are formed predominantly in the interior of the fragmenting nucleus.
The source characteristics of multifragmentation are investigated at interaction of gold target with protons beam at 3.6 GeV. It was found that the system is at least in "kinetic equilibrium"prior to fragment emission.

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2. V.D. Toneev et al., Nucl. Phys. A **519**, 463 (1990).
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Primary author: AVDEYEV, Sergej (JINR)

Co-authors: Dr BOTVINA, Alexander (FIAS, Germany); Mr MILNOV, Genadii (JINR); Ms STRELKOVA, Oxana (JINR); Dr RUKOYATKIN, Pavel (JINR); Mr STEGAJLOV, Vladimir (JINR); Dr KARCZ, Waldemar (JINR); Dr IGAMKULOV, Zafar (JINR)

Presenter: AVDEYEV, Sergej (JINR)

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