

## SOURCE VELOCITY IN COLLISIONS OF 3.6 GeV PROTONS WITH GOLD TARGET

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One way of evaluating the degree of equilibration in a reaction, as well as determining the average source velocity, is through invariant cross section analysis as a function of longitudinal and transverse velocity.

In the present work the source characteristics of multifragmentation are investigated for the  $p + Au$  collisions at 3.6 GeV. Beam of 3.6 GeV protons were obtained from the Dubna superconducting accelerator NUCLOTRON. Invariant cross sections of carbon fragments from target spectator were measured with the  $4\pi$  setup FASA [1]. Fig. 1 shows the longitudinal versus transverse velocity plot ( $\beta_{\perp}$  vs  $\beta_{\parallel}$ ) along points of constant invariant cross section for carbon fragments. The lines in Fig. 1 are fits to the data for a constant value of invariant cross section in the ( $\beta_{\perp}$  vs  $\beta_{\parallel}$ ) plane.

It was found to a good approximation that the data for a given invariant cross section are isotropic; i.e., they can be described by a circle with fixed locus, corresponding to a single average source velocity. This suggests that the system is at least in “kinetic equilibrium” prior to fragment emission. Mean source velocity ( $\beta = v/c$ ) of target spectator is  $0.0095 \pm 0.0003$ .

The research was supported by the Russian Foundation for Basic Research, Grant No. 19-02-00499.

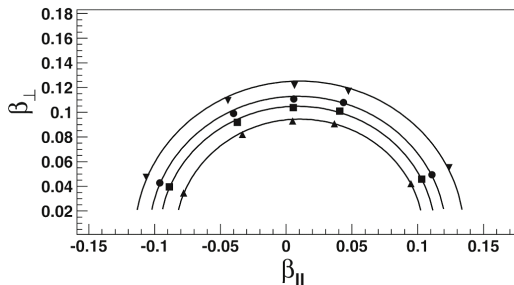


Fig. 1. Longitudinal versus transverse velocity plot along points of constant invariant cross section for carbon fragments. Points - experiment. Lines are fits to the data for a constant value of invariant cross section in the ( $\beta_{\perp}, \beta_{\parallel}$ ) plane.