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NA61/SHINE measurements of anisotropic flow relative to the spectator plane in Pb-Pb collisions over a wide rapidity range

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The NA61/SHINE experiment at the CERN SPS recently extended its program for the energy scan with Pb ions in the energy range of 13-150A GeV/c. Compared to the existing data from the NA49 experiment at the CERN SPS, the new data allows for more precise measurement of anisotropic flow harmonics. The fixed target setup of NA61/SHINE also allows to extend flow measurements available from the STAR at RHIC beam energy scan (BES) program to a wide rapidity range up to the forward region where projectile nucleon spectators appear. The NA61/SHINE measurements with Pb ions and the experimental techniques using spectators at the lowest energy available at the SPS are also relevant for the preparation of the Compressed Baryonic Matter (CBM) heavy-ion experiment at the future FAIR facility in Darmstadt.

The talk will present an analysis of the anisotropic flow harmonics in Pb-Pb collisions at beam momenta of 13A and 30A GeV/c collected by the NA61/SHINE experiment in the year 2016. Flow coefficients are measured relative to the spectator plane estimated with the Projectile Spectators Detector (PSD). The flow coefficients are obtained as a function of rapidity and transverse momentum in different classes of collision centrality. The results will be compared with the corresponding NA49 data and the measurements from the RHIC BES program.

In future, measurements will be extended to other collisions systems, such as Xe-La, Ar-Sc, and Be-Be collisions, which are available from the system size scan of the NA61/SHINE experiment. The developed measurement technique using spectators in a fixed target geometry are also relevant for physics performance studies of the future CBM experiment at FAIR at energies of 10A GeV/c and below. CBM is constructing a spectator detector of a design similar to that of the PSD of NA61/SHINE.

Content type

Experiment

Collaboration

NA61/SHINE

Centralised submission by Collaboration

Presenter name already specified

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