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Anisotropic flow measurements from the NA61/SHINE and NA49 beam momentum scan programs at CERN SPS

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The NA61/SHINE experiment at the CERN SPS has recently extended its program for the energy scan with Pb ions. In the past, the NA49 experiment, which preceded the NA61/SHINE, has also recorded data for Pb–Pb collisions at different energies. Together, the two experiments cover wide range of collision energies in the beam momentum range of 13–150A GeV/c provided by CERN SPS. Analysis of the new NA61/SHINE data and revision of the existing NA49 using modern measurement techniques allow for a new comprehensive systematic study of the collective flow relative to the spectator plane. The measurements 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.

We will present new NA61/SHINE results on directed and elliptic flow measurement in Pb–Pb collisions at 13 and 30A GeV/c relative to the spectator plane determined with the Projectile Spectator Detector. Also a new analysis of 40 and 158A GeV data collected by the NA49 experiment using forward spectator calorimeters (VETO and RCAL) will be shown. The flow coefficients are reported as a function of rapidity and transverse momentum in different classes of collision centrality. The new results are compared with existing results from previous NA49 analysis and the STAR data at RHIC.

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