# HADRON PHYSICS WITH CERES: SPECTRA AND COLLECTIVE FLOW

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Using the CERES/NA45 apparatus we have measured charged hadron spectra and their azimuthal anisotropies to provide information on stopping and collective behavior of the hot fireball formed in the collision. The experiment employs two silicon radial drift detectors close to the target and a RICH detector in front of, as well as a RICH detector and a padchamber behind a magnetic field. All charged hadrons generate signals in the silicon drift detectors and the padchamber, while only those with momenta above the Čerenkov threshold ($\sim$ 6 GeV/c for pions) are registered by the RICH detectors. Determination of the momentum of the hadrons is two-fold. For lower momentum *positives* and *negatives* it is achieved via the deflection between the silicon drift chambers and the padchamber. In addition, high momentum pions are identified and their momenta are measured via their ring radii in the RICH detectors. We will present spectra of *negatives* and *positives-minus-negatives* (closely linked to proton spectra) as well as spectra of identified $\pi^+/\pi^-$ in the pseudorapidity range $2.1 < \eta < 2.6$ and over a wide of range centralities. The shape of the spectra of *negatives* and of *positives-minus-negatives* should provide information about the temperature and the amount of collective flow present in the collision and we will discuss the results in this context. The identified charged pion spectra cover the range in $p_t$ of about 1-5 GeV/c and the high $p_t$ behavior and its centrality dependence will be compared to the know pp systematics.

An event shape analysis was performed using the charged particles detected in the silicon drift detectors. These detectors cover a large range of pseudorapidity ($2.0 < \eta < 3.5$) with high efficiency and excellent granularity and position resolution. The data exhibit a significant elliptical or quadrupole anisotropy which is a potential measure for the pressure in the early stage of the collision[1]. Hadron spectra are studied relative to the orientation of the quadrupole anisotropy as a function of transverse momentum and as a function of centrality. Comparison of similar data at AGS energies to model calculations has yielded insight into the dynamics of the evolution of such anisotropies[2]. Our data will be compared to various model calculations and be put into context with measurements of collective flow at the AGS and SIS.

[1] H. Sorge, Phys. Rev. Lett. **78**, 2309 (1997).
[2] J. Barrette et al., the E877 Coll., nucl-ex/9707002, sub. Phys. Rev. **C**.