

# Rapidity correlations in the RHIC Beam Energy Scan

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A pair-normalized two-particle covariance versus the rapidity of the two particles, called  $R_2$ , was originally studied [1] in ISR and FNAL data in the 1970's and has recently seen renewed interest [2] to study the dynamics of heavy-ion collisions in the longitudinal direction. These rapidity correlations can be decomposed onto a basis set of Legendre polynomials with prefactors,  $a_{mn}$ , which can be considered the rapidity analog of the decomposition of azimuthal anisotropies into a basis set of cosine functions with prefactors  $v_n$ . The  $a_{mn}$  values have been suggested [2] to be sensitive to the number of sources, baryon stopping, viscosities, and criticality. The rapidity correlations have been measured by the STAR collaboration as a function of the centrality and beam energy in the range of 7.7 to 200 GeV. The experimental results and comparisons to those from the UrQMD model [3] will be presented.

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