

Abstract Submitted
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Interpreting the CMS “ridge” in 7 TeV p-p collisions from the LHC¹ LANNY RAY, The University of Texas at Austin — The CMS Collaboration recently reported two-particle angular correlations for charged particle production from 0.9, 2.36 and 7 TeV p-p collisions [1]. For the higher multiplicity 7 TeV events long-range correlations on relative pseudorapidity (η) at small relative azimuth were observed. Phenomenological fits of the correlation data are presented where three models of the long-range η correlation are studied: (i) non-Gaussian jet-like correlation, (ii) a 1D Gaussian “ridge” on azimuth, and (iii) a quadrupole on azimuth. Each corresponds respectively to mechanisms which might account for the long-range structure: e.g. transverse jet fragmentation along the beam direction, longitudinal correlations promptly induced at the partonic stage, and final-state correlations associated with the eccentricity of the transverse, coordinate space distribution of colliding partons. The quadrupole correlation is well known in high energy heavy ion collisions. The analysis indicates that models (ii) and (iii) are competitive implying that the long-range structure is either caused by early time, longitudinal correlations or is a consequence of the anisotropic distribution of colliding partons.

[1] CMS Collaboration, JHEP **1009**, 091 (2010), arXiv:1009.4122.

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