

Observation of a ridge correlation structure in high multiplicity pp collisions with CMS

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Results on two-particle angular correlations are presented in proton-proton collisions at center of mass energies of 0.9, 2.36, 2.76 and 7 TeV, over a broad range of pseudorapidity and azimuthal angle. In very high multiplicity events at 7 TeV, a pronounced structure emerges in the two-dimensional correlation function for particle pairs with intermediate p_T of 1-3 GeV/c, in the kinematic region $2.0 < |\Delta\eta| < 4.8$ and small $|\Delta\Phi|$. This structure, which has not been observed in pp collisions before, is similar to what is known as the “ridge” in heavy ion collisions. It is not predicted by commonly used proton-proton Monte Carlo models and is not seen in lower multiplicity pp collisions. Updated studies of this new effect as a function of particle transverse momentum, rapidity and event characteristics are shown and discussed in comparison to various model calculations.

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