



Contribution ID: 19

Type: **Oral contribution**

Proton structure in high-energy high-multiplicity p-p collisions

Monday, 21 September 2015 15:30 (30 minutes)

Ridge-like correlations in high-energy proton-proton collisions reported by the CMS collaboration suggest a collective flow that resembles the one in heavy-ion collisions. If the hydrodynamic description is valid then the effect results from the initial anisotropy of the colliding matter, which depends on the distribution of matter in protons. Following recent theoretical developments, we propose several phenomenological models of the proton structure and estimate the associated anisotropy coefficients in p-p collisions using the Monte Carlo Glauber model[1]. Our estimates suggest that the initial anisotropy in some models appears capable of accounting for the p-p ridge effect, with potentially discernible differences in dependence on multiplicity.

[1] P. Kubiczek, S. D. Glazek, arXiv:1505.04155 [hep-ph].

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Session Classification: 3.