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Collective phenomena in pp interactions with high multiplicity

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Our study is aimed at the high multiplicity region where the series of collective phenomena are predicted. This region of multiplicity is unique. We have succeeded to descend on topological cross sections three orders down and receive the evidence the formation of a pion (Bose-Einstein) condensate. Almost half of the kinetic energy of an incident proton turns into secondary pions. For explanation of the mechanism of multiple production the phenomenological model or the gluon dominance model has been developed. We also observe in the angular distribution of charged pions two noticeable peaks, which we interpret as Cherenkov radiation of gluons by quarks. We are currently manufacturing an electromagnetic calorimeter for solving the puzzle of excess yield of soft photons.

Preferred track

Collectivity & Multiple Scattering

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