

On the energy dependence of the chaoticity parameter obtained from Bose-Einstein correlations of pion pairs produced in pp collisions

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The energy dependence of the chaoticity parameter, derived from Bose-Einstein correlations (BEC) of pion-pairs produced in proton-proton collisions, is investigated. Considered are the one and three dimensions (1D, 3D) of the BEC analyzed in terms of a Gaussian and / or exponential distributions. A marked difference is observed between the dependence of the chaoticity on energy in the 1D and the 3D analyses. The experimental data are examined in terms of the relation between the pion sources and the BEC dimension R which in turn are deduced from the charged outgoing particle multiplicity. This approach follows the 1D chaoticity general energy behavior as obtained from the BEC analyzes of the proton-proton collision data. Prediction for the chaoticity dependence on energy is obtained over a multi-TeV energy range based on a model of independent pion sources. The decrease of the chaoticity value with energy is expected within the framework of this approach is supported by the experimental findings.

Presentation type

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