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Role of chaoticity and information entropy in Multiparticle production at collider experiments

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Recent data from LHC has revived the question whether the matter produced in high energy hadronic collisions is thermalized or not. With the published data from ALICE and CMS experiments, we have shown that the multi-particle production in p+p collisions at LHC energies available up to now, follows the scaling of information entropy if one takes the chaotic and coherent sources of particle production into account and the information entropy is extracted from the chaotically produced particles. Based on these scaling properties we have argued that in hadronic collisions at the highest energies projected for LHC, almost all the particles will be produced chaotically. This indicates that a collective behavior will be observed even in the hadron-hadron collisions at that energy. Further connections of this study with heavy ion interactions will be elucidated.

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