

Non-Extensive Approach to High-Energy Collisions

Non-extensive thermodynamics is a novel and promising tool for the statistical interpretation of high energy phenomena. In particular the experimental systems are far from the familiar canonical state. On the basis of generalized entropy and energy composition rules also Tsallis–Pareto-like distributions can be obtained. Such distributions reproduce extremely well the various transverse momentum spectra in hadron-hadron collisions and in cosmic rays. However, the derivation and the correct interpretation of the Tsallis-Renyi parameter are still unsolved questions.

We investigated several models to discover the non-extensive phenomena behind hadronization. Here we present our results for (i) a possible microcanonical generalization of the Tsallis distribution in $e+e-$ collision, and (ii) the original Tsallis Pareto-like distribution including QCD evolution ansatz for the hadronization process.

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