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Microcanonical Tsallis statistics in jet fragmentation at LHC and LEP

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For the description of hadronic spectra in high-energy nuclear reactions, it is essential to understand the process of hadronisation. However, hadron creation is still an unsettled matter from the theoretical point of view.

In the talk, I show that hadron distributions inside jets (fragmentation functions) created in $s^{1/2} = 7$ TeV (LHC) proton-proton [1] and also in high-energy electron-positron [2] collisions can be described by a statistical jet-fragmentation model. This model combines microcanonical statistics and super-statistics induced by multiplicity fluctuations. The resulting scale dependence of the parameters of the model turns out to be similar to what was observed in electron-positron annihilations in Ref. [2].

[1] Phys. Lett. B 701: 111-116, 2011; arXiv:1101.3023

[2] Submitted to PLB, arXiv:1204.1508

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