



Contribution ID: 100

Type: poster

Overview of the two component model for hadroproduction

Overview of the two component model for hadroproduction based on the recently published papers is presented. The transverse momentum spectra of hadrons produced in high energy collisions can be decomposed into the two components: the exponential (thermal) and the power (hard) ones. Thus, charged hadron spectra produced in various interactions and measured in different experiments from ISR to LHC are considered simultaneously within this model. As a result, it is shown that this model provides a much better description of the available experimental data than other widely used parameterizations. Moreover, the relative contributions of the exponential and power-law components to the spectra vary with the type of the collisions, the type of the produced hadron, the charged multiplicity and the measured pseudorapidity region. The possible mechanism of this effect is discussed: while the thermal component might be produced in the fragmentation of the color string due to the effective event horizon introduced by confinement, the power-law term resembles the Regge theory with the pQCD pomeron. Finally, a universal parameter describing a shape of the spectra in pp-collisions is found.

The observed dependences are used to make predictions on the mean transverse momenta, pseudorapidity distributions and double-differential cross-sections at LHC-energies, which are tested on already available experimental data and predictions for future LHC measurements are presented.

additional information

The review talk will be based on the following papers by myself and my co-authors published recently: 1. arXiv:1501.05235 Eur.Phys.J C (2015) 75:166 2. arXiv:1407.4087 Int.J.Mod.Phys. E23 (2014) 0083 3. arXiv:1404.7302 Nucl.Phys. B888 (2014) 65-74 4. arXiv:1404.4739 Phys.Rev. D90 (2014) 1, 017501 5. arXiv:1405.3055 Phys.Rev. C90 (2014) 1, 018201 6. arXiv:1203.2840 Eur.Phys.J. C74 (2014) 5, 2898 7. arXiv:1112.5734 Eur.Phys.J. C72 (2012) 1961 8. arXiv:1008.0332 Phys.Atom.Nucl. 75 (2012) 999-1005 The most interesting and important points will be selected, also taking into account new measurements at LHC Run-II if some public results related to the topic will be available already in July.

Authors: Dr BYLINKIN, Alexander (MIPT); ROSTOVTSEV, Andrei (ITEP Institute for Theoretical and Experimental Physics (RU))

Co-authors: KHARZEEV, Dmitri (Stony Brook U./BNL); RYSKIN, Mikhail (Petersburg Nuclear Physics Institute); CHERNYAVSKAYA, Nadezda (National Research Nuclear University MEPhI (RU))

Presenter: Dr BYLINKIN, Alexander (MIPT)

Track Classification: QCD and Hadronic Physics