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Role of gluons in soft and semi'hard hadron production in pp collisions at LHC (15' + 5')

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Hadron inclusive spectra in pp collisions are analyzed within the soft QCD (SQCD), the quark-gluon string model, and the perturbative QCD (PQCD). It is shown that the SQCD results in the satisfactory description of the experimental data on the inclusive spectra of light hadrons like pions and kaons at transverse momenta P_t not larger than 1-2 GeV/c. We discuss some difficulties to apply the SQCD model at energies above the ISR and suggest to include the distribution of gluons in the proton unintegrated over the internal transverse momentum. It leads to an increase in the inclusive spectra of hadrons and allows us to extend the satisfactory description of the data in the central rapidity region at LHC energies. The comparison of our results with data at low P_t allows us to find the information on the unintegrated gluon distribution in proton.

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