

## Quark-hadron duality and large- $x$ PDFs

*Friday, 14 March 2014 12:00 (45 minutes)*

We present an analysis of the role of the running coupling constant at the intersection of perturbative and non-perturbative QCD. A unified description of the 2 regimes (pQCD and NP QCD) might derive through the definition of the effective coupling, as they both provide ways of analyzing its freezing in the IR region. We extract the effective coupling from all available experimental data on the unpolarized structure function of the proton at large values of Bjorken  $x$ , including the resonance region. We suggest that parton-hadron duality observed in this region can be explained if non-perturbative effects are included in the coupling constant. The outcome of our analysis is a smooth transition from perturbative to non-perturbative QCD physics, embodied in the running of the coupling constant at intermediate scales. While our approach is purely perturbative, we compare our result to various non-perturbative schemes.

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