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Confronting current NLO charged-hadron fragmentation functions with LHC data

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The recent LHC and Tevatron data for inclusive high- p_T charged hadron production in p+p(p) collisions show a discrepancy in comparison to the NLO perturbative QCD predictions with modern fragmentation functions (FFs). We have quantified this observation by a systematic comparison between the calculations with different FF sets and data for several collision energies [1]. We show that especially the predictions with the most recent FFs clearly overshoot the high- p_T , high- \sqrt{s} data even when the scale variations, and uncertainties in the PDFs and FFs are accounted for. We conclude that this behavior is due to the too hard gluon-to-hadron FFs, which calls for a complete re-analysis of the FFs using the high- \sqrt{s} data at $p_T > 10$ GeV where the theoretical uncertainties are only modest. We discuss also to what extent these discrepancies affect the interpretation of the LHC p+Pb collision data.

[1] D. d'Enterria, K.J. Eskola, I. Helenius and H. Paukkunen, *Confronting current NLO parton fragmentation functions with inclusive charged-particle spectra at hadron colliders*, arXiv:1311.1415 [hep-ph], submitted to Nucl. Phys. B.

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