Heavy quarks (charm and beauty)

January 11, 2005

0.1 Introduction

General introduction

0.2 HF at HERA, Experimental Overview

0.2.1 Experiments and HF trigger and tagging techniques

0.2.2 Results from HERA-I

0.2.3 HERA-II capabilities

(Massimo, Olaf, Andreas,...)

0.3 HF at LHC, Experimental Overview

0.3.1 Event rates, luminosities

0.3.2 Triggers for HF

0.3.3 Other technical aspects: backgrounds, normalizations etc.

0.3.4 Physics potential

(Maria, Andrea, Christian, Ulrich, ...)

0.4 Overview of the status of HF production theory

(Matteo, Lanen, ...)

0.5 Matching fixed order and resummed calculations

0.5.1 PDFs with Variable Flavour-Number Schemes

0.5.2 Heavy hadron production: matching fixed order calculations and perturbative fragmentation function

0.5.3 Threshold resummations

0.5.4 NLO MC ?

(Matteo, Laenen, Knihel, Kretzer, someone from MRST, ask Frixione for MC ?)

0.6 Small-x effects on Heavy Quark production

0.6.1 Kt factorization and HQ production

0.6.2 Effects of nonlinear evolution

(Jung, Zotov, Baranov, Kutak, Andrea, Kohlinen)

0.7 Heavy Quark PDFs for LHC

0.7.1 Processes initiated by HQs at LHC

0.7.2 HQ PDFs from measurements at HERA

0.7.3 Measurements of HQ PDFs at LHC

(Maltoni, Tonazzo, Was, Thompson, Wing, PDF fitters? ...)

0.8 Heavy Quark Fragmentation Functions

0.8.1 FF from e^+e^- data

0.8.2 Uncertainty on heavy hadron production due to FF

0.8.3 Testing FF universality in ep, pp

(Matteo, Massimo, Wing, ...)

0.9 Heavy Quark correlations

0.9.1 Motivation for studying HQ correlations

0.9.2 HQ correlations at HERA

0.9.3 HQ correlations at LHC

(Matteo ?, Lagouri, Behnke, someone from ZEUS,...)

0.10 MC Tuning and Tools

0.10.1 HZTOOLS developments

0.10.2 JetWeb studies

(Gutsche, Massimo, Andrea, cojunction with the MC group ?)

0.11 Benchmark cross-sections ???

(Aa separate chapter or goes in the theoretical overview ?)