

# Hard Probes in Heavy Ion Collisions at the LHC: Heavy Flavour Physics

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## Abstract

We present the results from the heavy quarks and quarkonia working group [1]. This report gives benchmark heavy quark and quarkonium cross sections for  $pp$  and  $pA$  collisions at the LHC against which the  $AA$  rates can be compared in the study of the quark-gluon plasma. We also provide an assessment of the theoretical uncertainties in these benchmarks. We then discuss some of the cold matter effects on quarkonia production, including nuclear absorption, scattering by produced hadrons, and energy loss in the medium. Hot matter effects that could reduce the observed quarkonium rates such as color screening and thermal activation are then discussed. Possible quarkonium enhancement through coalescence of uncorrelated heavy quarks and antiquarks is also described. Finally, we discuss the capabilities of the LHC detectors to measure heavy quarks and quarkonia as well as the Monte Carlo generators used in the data analysis.

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[1] M. Bedjjidian et al. (2003), hep-ph/0311048.