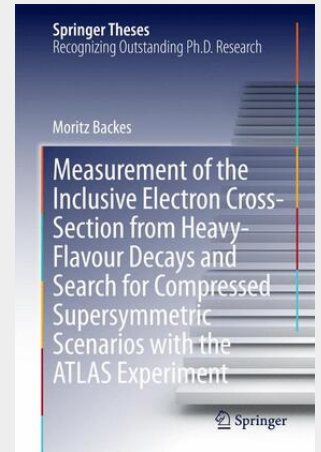


Measurement of the Inclusive Electron Cross-Section from Heavy-Flavour Decays and Search for Compressed Supersymmetric Scenarios with the ATLAS Experiment

The first part of this thesis presents the measurement of the inclusive cross-section for electron production from heavy-flavour decays in the electron transverse momentum range $7 \text{ GeV} < p_T < 26 \text{ GeV}$ using 1.3 pb^{-1} of 7 TeV proton-proton collision data collected by the ATLAS experiment at the Large Hadron Collider in 2010. The measured value of the cross-section within the fiducial range of the analysis is $\sigma_{e^+HF} = 0.946 \pm 0.020(\text{stat.}) \pm 0.146(\text{syst.}) \pm 0.032(\text{lumi.}) \mu\text{b}$. Theoretical predictions are in good agreement with the measurement. The second part of this thesis is a search for compressed supersymmetric scenarios in events with missing transverse energy, jets and one isolated low- p_T lepton in the final state using 4.7 fb^{-1} of ATLAS data collected at 7 TeV center-of-mass energy in 2011. No significant excess of events over the Standard Model expectation is observed and exclusion limits are derived for a number of supersymmetric models.

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