Recent results of quarkonium and heavy flavour at ATLAS

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Abstract. Heavy quark spectroscopy and exotic states are studied with the ATLAS detector, mainly thorough final states containing muon pairs from J/ψ decays from both proton-proton, proton-lead and lead-lead collisions. This proceedings will summarise recent results from ATLAS, including production of quarkonium and heavy flavour, searches for exotic states and measurements of decay properties in open beauty production.

1 Introduction

Hardons have been used to test the particle physics Standard Model (SM) for a long time. The heavy flavour hadrons are massly produced in the proton proton collisions at Large Hadron Collider. With ATLAS detector, the production and decay of the heavy flavour hadrons could be studied. When comparing with the other detectors which are optimised for hadron physics study, such as BELLE (II), BESIII, and LHCb, the advantage of ATLAS is that the number of recorded hardons is larger, while the disadvantage is the particle identification system is not designed for the seperation between different hadrons. Normally, the $J/\psi \to \mu^+\mu^-$ is required in the final state, in order to reduce the background, which is much more higher in the hadron collider when comparing with electron-positron collider.

In this proceddings, four recent publications from ATLAS are discussed, they are:

- Search for a Structure in the $B_s^0\pi^\pm$ Invariant Mass Spectrum with the ATLAS Experiment [1]
- Measurement of b-hadron pair production with the ATLAS detector in proton-proton collisions at $\sqrt{s} = 8$ TeV [2]
- Measurement of quarkonium production in proton–lead and proton–proton collisions at 5.02 TeV with the ATLAS detector [3]
- Angular analysis of $B_d^0 \to K^*\mu^+\mu^-$ decays in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector [4]

2 Summary

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References

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