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ATLAS NOTE

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Muon Segment Seeding for ATLAS Muon Reconstruction in Run II

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Abstract

In Run II, ATLAS Muon Reconstruction uses Hough Transform to select raw hits and make local maximas. Maximas that meet certain criteria are used as seeds for road, which are extended pathes in the Muon Spectrometer. The hits contained in all the roads are the input for Muon Segment finding. This note serves as a short introduction to the current methods, the possible improvements in road finding, and impacts on segments reconstruction with different seed thresholds.

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1 Introduction

This is a short intro.

2 Simulation Samples

Samples used for this analysis are reconstructed with ATLAS release 21.0.4(5). List of samples used are:

3 Muon Spectrometer

This is a short intro to Muon Spectrometer.

4 Reconstruction Overview

This is a short intro.

5 Segment Seeding

This is a short intro.

5.1 Hough Transform

5.2 Hits and Maximas

5.3 Maxima and Seed Properties

6 Road Making

This is a short intro.

6.1 Extrapolation to roads

6.2 Linear vs Parabolic

6.3 Combined Effects with Seed Selection

7 Conclusion

This will be filled in later.

A Appendix

References

[1] ATLAS Collaboration, *Muon Offline Monitoring at Tier0 using cosmics and Full Dress Rehearsal(FDR) simulated data*, https://cds.cern.ch/record/1223323?ln=en