



Contribution ID: 32

Type: **Plenary**

Minimum Pt Track Reconstruction in ATLAS

Monday 20 April 2020 20:45 (15 minutes)

In the most recent year of data-taking with the ATLAS detector at the Large Hadron Collider (LHC), the minimum p_T of reconstructed tracks was 500 MeV. This bound was set to reduce the amount of combinatorial problem solving required and to save disk space, which is a challenge in high pileup environments. However, most proton-proton collisions at the LHC will result in a large number of soft particles. While ATLAS does have two frameworks in place for performing low- p_T tracking in low pileup runs, for some analyses, the reconstruction of these soft particles in high pileup can provide important information. This talk will explain a method of tracking in high pileup where low- p_T tracks are reconstructed in a second tracking pass after default tracking and will elaborate on problems such as seed optimization, hit selection, and offline track selection requirements. Additionally, in order to prevent a large increase in the per-event reconstruction time, tracks are only reconstructed within a “region of interest”, which is defined event-by-event. This method of tracking has been developed and tested by a team searching for photon-induced WW production at the LHC. Other analyses should be able to use this tracking method too; for example, charm tagging can be improved by reconstructing low- p_T particles.

Consider for young scientist forum (Student or postdoc speaker)

Yes

Second most appropriate track (if necessary)

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Session Classification: Recording sessions