



SÉMINAIRE DE PHYSIQUE CORPUSCULAIRE

SUJET: **Probing the Energy Frontier with ATLAS**

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RÉSUMÉ:

A new age of exploration dawned at the start of Run 2 of the Large Hadron Collider, as protons began colliding at a centre-of-mass energy of 13 TeV. Jets now shower in the ATLAS detector with energies of multiple TeV, and tau-leptons and b-hadrons passing through multiple layers of the detector are now common place. These energetic collisions are prime hunting grounds for new physics, including massive new particles that decay to highly boosted bosons. In these very energetic jets, the average separation of charged particles is comparable to the size of individual inner detector elements. This easily creates confusion within the algorithms reconstructing charged particle trajectories (tracks). Therefore, without careful consideration, this can limit the track reconstruction efficiency in these dense environments.

Recently published results highlighting the ATLAS detector's excellent performance in reconstructing charged particles in dense environments will be presented. The results also include, for the first time, a novel method for determining the efficiency in reconstructing tracks in these environments from data, using the ionization energy loss (dE/dx), measured with the ATLAS pixel detector. The implications of these results for new methods to perform jet reconstruction, and the impact on physics analysis will be discussed, using a search for resonances in the hadronically decaying WZ, WW, or ZZ final state.

INFORMATION : <http://dpnc.unige.ch/seminaire/annonce.html>

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