



Contribution ID: 421

Type: poster

Dedicated Trigger for Highly Ionising Particles at ATLAS

In 2012, a novel strategy was designed to detect signatures of Highly Ionising Particles (HIPs) such as magnetic monopoles, dyons or Qballs with the ATLAS trigger system. With proton-proton collisions at a centre of mass energy of 8 TeV, the trigger was designed to have unique properties as a tracker for HIPs. It uses only the Transition Radiation Tracker (TRT) system, applying an algorithm distinct from standard tracking ones. The unique high threshold readout capability of the TRT is used at the location where HIPs in the detector are looked for. In particular the number and the fraction of TRT high threshold hits is used to distinguish HIPs from background processes. The trigger requires significantly lower energy depositions in the electro-magnetic calorimeters as a seed unlike previously used trigger algorithms for such searches. Thus the new trigger is capable of probing a large range of HIP masses and charges.

We will give a description of the algorithms for this newly developed trigger for HIP searches and present results on its performance during the 2012 data-taking, comparing them to previously used triggers for HIP searches. Furthermore, presented will be higher signal efficiencies in the challenging Run 2 environment of the Large Hadron Collider (LHC) due to increased centre of mass energy and luminosity despite of demanding pile-up conditions.

Author: KATRE, Akshay (Universite de Geneve (CH))

Presenter: KATRE, Akshay (Universite de Geneve (CH))

Track Classification: Detector R&D and Data Handling