



Contribution ID: 75

Type: Poster

## The ATLAS Tau Trigger for Run2 of the LHC

In the Run 2 of the Large Hadron Collider, the strategies for triggering will become more important than ever for physics analyses. The ATLAS tau trigger system combines information from the tracking and calorimetry detectors to identify the signature of tau lepton hadronic decays. Under the demanding, high luminosity environment of Run 2 at the LHC experiment (with instantaneous luminosities as large as  $2 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ ), triggering on hadronic tau leptons requires faster reconstruction algorithms than ever before.

We present two new algorithms currently being deployed: a more precise and faster calorimeter energy cluster reconstruction, and a high-speed tracking, along with their expected performance for the Run 2 experiment.

Simple triggers requiring single taus suffer from severe rate limitations, despite the sophisticated algorithms used in the tau identification. To address this limitation, higher efficiency triggers implementing topological selections are designed. Using these new developments, tau triggers will provide many opportunities to study new physics beyond the Standard Model, and to get precise measurements of the properties of the Higgs boson decaying to tau-leptons.

Finally, the expected feasibility of tau physics measurements in Run 2 will be presented.

**Author:** RADOS, Petar Kevin (University of Melbourne (AU))

**Presenter:** RADOS, Petar Kevin (University of Melbourne (AU))

**Track Classification:** Data-processing: 3b) Trigger and Data Acquisition Systems