Performance of the bwHPC cluster in the production of μ → τ embedded events used for the prediction of background for H → ττ analyses

In high energy physics, a main challenge is the accurate prediction of background events at a particle detector. These events are usually estimated by simulation. As an alternative, data-driven methods use observed events to derive a background prediction and are often less computationally expensive than simulation.

The τ lepton embedding method presents a data-driven method to estimate the background from $Z \rightarrow \tau\tau$ events for Higgs boson analyses in the same final state. $Z \rightarrow \mu\mu$ events recorded by the CMS experiment are selected, the muons are removed from the event and replaced with simulated τ leptons with the same kinematic properties as the removed muons. The resulting hybrid event provides an improved description the production of jets compared to the simulation of the full proton-proton collision. On this poster the production of these hybrid events is described. The production relies on the resources made available by the bwHPC project.

Abstract (optional)

Authors: Prof. QUAST, Günter (Institut für Experimentelle Teilchenphysik, Karlsruher Institut für Technologie); BROMMER, Sebastian; BECHTEL, Janek (KIT); Dr WOLF, Roger (Institut für Experimentelle Teilchenphysik, Karlsruher Institut für Technologie); Mr GOTTMANN, Artur (KIT)

Presenter: BROMMER, Sebastian

Session Classification: Lunch / Poster Session 1

Track Classification: Scientific Track