20th International Conference on Computing in High Energy and Nuclear Physics (CHEP2013)

Contribution ID: **292** Type: **Oral presentation to parallel session**

Challenges of the ATLAS Monte Carlo production during run 1 and beyond

Thursday, 17 October 2013 11:22 (22 minutes)

In this presentation we will review the ATLAS Monte Carlo production setup including the different production steps involved in full and fast detector simulation. A report on the Monte Carlo production campaigns during Run 1 and Long Shutdown 1 will be presented, including details on various performance aspects. Important improvements in the workflow and software will be highlighted.

Besides standard Monte Carlo production for data analyses at 7 and 8 TeV, the production accommodates various specialised activities. These include extended Monte Carlo validation, Geant4 validation, pileup simulation using zero bias data, and production for various upgrade studies. The challenges of these activities will be discussed.

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Session Classification: Distributed Processing and Data Handling B: Experiment Data Processing, Data Handling and Computing Models

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