

# 21st International Conference on Computing in High Energy and Nuclear Physics (CHEP2015)



Contribution ID: 164

Type: oral presentation

## A New Petabyte-scale Data Derivation Framework for ATLAS

*Tuesday, 14 April 2015 14:15 (15 minutes)*

During the Long shutdown of the LHC, the ATLAS collaboration overhauled its analysis model based on experience gained during Run 1. A significant component of the model is a “Derivation Framework” that takes the Petabyte-scale AOD output from ATLAS reconstruction and produces samples, typically Terabytes in size, targeted at specific analyses. The framework incorporates all of the functionality of the core reconstruction software, while producing outputs that are simply configured. Event selections are specified via strings, including support for logical operations. The output content can be highly optimised to minimise disk requirements, while maintaining the same C++ interface. The framework includes an interface to the late-stage physics analysis tools, ensuring that the final outputs are consistent with tool requirements. Finally, the framework allows several outputs to be produced for the same input, providing the possibility to optimise configurations to computing resources.

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**Session Classification:** Track 2 Session

**Track Classification:** Track2: Offline software