

The ATLAS Trigger Simulation with Legacy Software

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Physics analyses at the LHC require accurate simulations of the detector response and the event selection processes. The accurate simulation of the trigger response is crucial for determining the overall selection efficiencies and signal sensitivities. For the generation and reconstruction of simulated event data, the most recent software releases are used to ensure the best agreement between simulated and real data. However for the simulation of the trigger selection process the same software release with which real data were taken should be used. This requires potentially running with legacy software dating back many years.

The requirements and possibilities for such a simulation scheme within the ATLAS software framework were examined and a proof-of-concept simulation chain has been successfully implemented. One of the greatest challenges was the choice of a data format which promises long term compatibility with old and new software releases, databases and other external support services. The encountered problems and developed solutions will be presented, and proposals for future development will be discussed. Some ideas reach beyond the retrospective trigger simulation scheme in ATLAS as they also touch more generally aspects of data preservation.

Primary authors: MASIK, Jiri (University of Manchester (GB)); BERNIUS, Catrin (SLAC National Accelerator Laboratory (US))

Presenter: BERNIUS, Catrin (SLAC National Accelerator Laboratory (US))

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