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Offline Software for the ATLAS Combined Test Beam

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A full slice of the barrel detector of the ATLAS experiment at the LHC is being tested this year with beams of pions, muons, electrons and photons in the energy range 1-300 GeV in the H8 area of the CERN SPS. It is a challenging exercise since, for the first time, the complete software suite developed for the full ATLAS experiment has been extended for use with real detector data, including simulation, reconstruction, online and offline conditions databases, detector and physics monitoring, and distributed analysis. Important integration issues like combined simulation, combined reconstruction, connection with the online services and management of many different types of conditions data are being addressed for the first time, with the goal of both achieving experience on such integration aspects and of performing physics studies requiring the combined analysis of simultaneous data coming from different subdetectors. It is a unique opportunity to test, with real data, new algorithms for pattern recognition, particle tracking and identification and High Level Trigger strategies. A relevant outcome of this combined test beam will be a detailed comparison of Monte Carlo - based on Geant4 - with real data. In the talk the main components of the software suite are described, together with some preliminary results obtained both with simulated and real data.

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