

FATRAS Summary

The new Fast ATLAS Track Simulation (FATRAS) has been developed in parallel to the new extrapolation engine to be used in the restructured ATLAS offline event reconstruction. The track extrapolation engine with its underlying full connective reconstruction geometry serves as the core part of the fast track simulation, providing mainly the intrinsic navigation of the inter-connected volumes to predict the track direction. The FATRAS simulation is fully embedded in the recently established new ATLAS Event Data Model (EDM) and guarantees full compatibility with the persistency services of the ATLAS offline software. Being designed with high granularity, the FATRAS simulation can be operated with different propagation modes, following a step-wise, helical or linear track model. It facilitates in addition the configuration of the inert material, the magnetic field configuration and the modelling of the underlying particle interaction with the traversed material.

Initially the FATRAS simulation has been intended to be used for validation and debugging of the recently developed reconstruction algorithm, as the idealistic track creation enables to factorize pattern recognition and track fitting, but includes - alternatively to the widely used ATLAS fast simulation ATLFAST - full hit information on the tracks. An additional interface to the standardized output of physic event generators to be used in ATLAS simulation enables in addition systematical physics studies with a high statistics that hardly reached with full detector simulation.

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