

Track Extrapolation with intrinsic Navigation in the new ATLAS Tracking scheme

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During a two years period of restructuring the ATLAS reconstruction and tracking software a new track extrapolation package has been deveolped for multiple use in tracking, reconstruction and physics analysis. The track extrapolation package was developed in full synchronization with the common ATLAS event data model to guarantee required modularity and the flexibility for the use in different sub detector realms.

The extrapolation process and its main sub-algorithms such as propagation, navigation and material effect updates are presented emphasizing the concept of a fully connective tracking geometry for the purpose of native navigation and access to both magnetic field and material information. An overview of existing underlying mathematical propagation methods covering straight line or helical track models as well as a Runge-Kutta integrational method with and without continous material interaction is given.

The new extrapolation package was extensively used in the reconstruction of taken data from the ATLAS Combined Testbeam 2004. Results from the Testbeam reconstruction and from performance studies with fully simulated ATLAS events are presented.

-- AndreasSalzburger - 28 Jun 2005

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