Contribution ID: **67** Type: **presentation**

A High-Precision Tracking Algorithm for Mass Reconstruction of Heavy-Ion Fragments in the R3B Experiment at FAIR

Tuesday 10 July 2018 14:15 (15 minutes)

The multi-purpose R^3B (Reactions with Relativistic Radioactive Beams) detector at the future FAIR facility in Darmstadt will be used for various experiments with exotic beams in inverse kinematics. The two-fold setup will serve for particle identification and momentum measurement up- and downstream the secondary reaction target. In order to perform a high-precision charge identification of heavy-ion fragments and achieve a momentum resolution of 10^{-4}, a ToF measurement with 100 ps accuracy, position determination on the order of less than 0.5 mm and a dedicated algorithm for the heavy-ion tracking in highly non-homogeneous dipole field are required. With these constraints a tracking package is being developed and tested within the R^3B software framework, this package has to go into production in fall of 2018. An iterative approach has been chosen for simultaneous track finding and fitting. The design and concept of the package will be introduced, also the tests and efficiencies measured with simulated data will be presented.

Primary authors: KRESAN, Dmytro (GSI - Helmholtzzentrum fur Schwerionenforschung GmbH (DE)); LÖHER, Bastian (GSI Darmstadt); HEIL, Michael (GSI Darmstadt)

Presenter: KRESAN, Dmytro (GSI - Helmholtzzentrum fur Schwerionenforschung GmbH (DE))

Session Classification: T2 - Offline computing

Track Classification: Track 2 –Offline computing