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The GENFIT Library for Track Fitting and its Performance in Belle II

GENFIT is an experiment-independent, universal track-fitting package, available under a free software license. It implements a variety of track-fitting algorithms and provides the surrounding functionality needed by particle physics experiments: general handling of detector hits, supplemented with example implementations for various detector types; track extrapolation code; a track-data model allowing for flexible storage and track-level operations such as the chaining of tracks from different subdetectors; residual calculation; interfaces to alignment codes; track and fit visualization, which can also serve didactical purposes. The package has been significantly overhauled and extended in the course of the development of the Belle II software framework, taking into account lessons learned also in the COMPASS, FOPI and PANDA experiments. GENFIT is particularly suited e.g. for new experiments that want to be able to use track fits of simulated data already at early stages in order to more realistically assess the impact of design choices. We will report on the current status of the project, performance of the code within Belle II, and share some of the lessons learned during the work on the project.

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