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Integration of the ACTS track reconstruction toolkit in the ATLAS software for HL-LHC operations

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In view of the High-Luminosity LHC era the ATLAS experiment is carrying out an upgrade campaign which foresees the installation of a new all-silicon Inner Tracker (ITk) and the modernization of the reconstruction software.

Track reconstruction will be pushed to its limits by the increased number of proton-proton collisions per bunch-crossing and the granularity of the ITk detector. In order to remain within CPU budgets while retaining high physics performance, the ATLAS Collaboration plans to use ACTS, an experiment-independent toolkit for track reconstruction. The migration to ACTS involves the redesign of the track reconstruction components as well as the ATLAS Event Data Model (EDM), resulting in a thread-safe and maintainable software.

In this contribution, the current status of the ACTS integration for the ATLAS ITk track reconstruction is presented, with emphasis on the improvements of the track reconstruction software and the implementation of the ATLAS EDM.

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