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New developments in track reconstruction for the ATLAS experiment for Run-2 of the LHC (12' + 3')

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Run-2 of the LHC has provided new challenges to track and vertex reconstruction with higher energies, denser jets and higher rates. In addition, the Insertable B-layer (IBL) is a fourth pixel layer, which has been inserted at the centre of ATLAS during the shutdown of the LHC. We will present results showing the performance of the track and vertex reconstruction algorithm using Run-2 data at the LHC, highlighting the improvements to track reconstruction developed during the two year shutdown of the LHC. These include novel techniques developed to improve the performance in the dense cores of jets, optimisation for the expected conditions, and a big software campaign which lead to a factor of three decrease in the CPU time needed to process each recorded event.

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