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The CMS tracker performance in Run3

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The inner tracker of CMS is the largest silicon tracker ever built with 1856 pixel and 15148 strip detector modules that provide accurate track reconstruction. To achieve high precision in measurements of the momenta of charged particles, corrections for the position, rotation and curvature of these modules must be found; such a procedure is known as tracker alignment. Magnet cycles, temperature variations and ageing of modules cause significant time variations that affect the track reconstruction and therefore necessitate continuous alignment throughout the operation of the LHC machine. Special challenges must be addressed in the Run 3 data-taking period as the high instantaneous luminosity and the newly installed layer 1 of the barrel pixel lead to fast changes in the irradiation of modules.

In this presentation, the performance of tracker alignment on Run 3 data will be presented, highlighting new features developed for the Run 3 data taking period. The impact of the tracker alignment on physics performance will also be reviewed.

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