## Fourth Annual Large Hadron Collider Physics Conference 2016



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## The alignment of the ATLAS Inner Detector in Run-2

ATLAS is a multipurpose experiment at the LHC proton-proton collider. Its physics goals require high resolution, unbiased measurement of all charged particle kinematic parameters. These critically depend on the layout and performance of the tracking system and the quality of its offline alignment. For the LHC Run II, the system has been upgraded with the installation of a new pixel layer, the Insertable B-layer (IBL). Offline track alignment of the ATLAS tracking system has to deal with about 700,000 degrees of freedom (DoF) defining its geometrical parameters, representing a considerable numerical challenge in terms of both CPU time and precision. An outline of the track based alignment approach and its implementation within the ATLAS software will be presented. Special attention will be paid to integration to the alignment framework of the IBL. Techniques allowing to pinpoint and eliminate tracking systematics due to alignment as well as strategies to deal with time-dependent variations will be briefly covered. The results from the 2015 data taking campaigns will be discussed in which a mechanical distortion of the IBL staves has been observed and preliminary results will be

presented detailing how this effect is mitigated.

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