

Abstract Submitted  
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**Alignment of the ATLAS Inner Detector** JOHN ALISON, University of Pennsylvania, ATLAS COLLABORATION — ATLAS is a one of the four multi-purpose experiments that records the products of the LHC proton-proton collisions at the LHC. The ATLAS Inner Detector is a charged particle tracking system built on two different technologies, silicon planar sensors (pixel and microstrips) and drift-tube based detectors, all embedded in a 2 T solenoidal field. The Inner Detector consists of  $\sim 6000$  modules in its Silicon Tracker combined with  $\sim 350,000$  channels in the straw tracker. The position of the devices after construction is known much less accuracy than their intrinsic resolution. A track based alignment procedure has been applied to better determine the absolute position of the sensitive devices. The alignment algorithms is based on minimization of the track-hit residuals and involves solving a linear system with a large number of degrees of freedom. We will present the status and performance of the ATLAS Inner Detector alignment system using the 2010 LHC run at 7 TeV. The alignment is performed combining isolated high pT collision tracks with cosmic ray tracks triggered during the empty LHC bunches. The alignment of the silicon subsystems had been performed at the module level, while the straw-tube tracker has been aligned at the channel level.

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