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Performance and Results of the ATLAS FSI Alignment System

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The Frequency Scanning Interferometry (FSI) alignment system has been developed to monitor the movement of the ATLAS SemiConductor Tracker (SCT) at CERN. Over 800 fibre-coupled interferometers are arranged to form a geodetic grid of distance measurements between nodes on the SCT. The full set of interferometers are read out simultaneously and continuously, also during ATLAS data-taking. Since 2009, the FSI system has successfully measured sub-micron deformations in the tracker and contributed to the ATLAS Inner Detector alignment. In this talk, new modes of data-taking are introduced; the performance and measurements of the system are discussed; and a new visualiser application is presented, which has been developed to enable a qualitative appreciation of the significance of displacement data.

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