

Track and vertex reconstruction in the ATLAS Experiment

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The track and vertex reconstruction algorithms of the ATLAS Inner Detector have demonstrated excellent performance in the early data from the LHC. However, the rapidly increasing number of interactions per bunch crossing introduces new challenges both in computational aspects and physics performance. The combination of both silicon and gas based detectors provides high precision impact parameter and momentum measurement of charged particles, with high efficiency and small fake rate. Vertex reconstruction is used to identify with high efficiency the hard scattering process and to measure the amount of pile-up interactions, both aspects are crucial for many physics analyses. The performance of track and vertex reconstruction efficiency and resolution achieved in the 2011 data-taking period and for the 2012 data-taking, where improved algorithms will be used, are presented.

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