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Beam Conditions Monitor in ATLAS

In order to monitor beam conditions and detect signs of beam instabilities which could cause damage to their detectors, LHC experiments have decided to develop their own systems in addition to those provided by the accelerator. ATLAS Beam Conditions Monitor (BCM) will consist of eight detector modules with diamond pad sensors, placed symmetrically around the interaction point along the beam axis at z = ±183.8 cm. By use of fast electronics, timeof-flight measurements will provide unique distinction between normal beam events of colliding protons and anomalous events which induce background (e.g. beam interactions with residual gas) and could in worst case damage the ATLAS detector (e.g. several bunches hitting the beam collimator upstream the detector). Additionally BCM modules will be used to measure the interaction rate providing an estimation of LHC luminosity in ATLAS. Final modules are now being assembled and subjected to tests before their installation onto the ATLAS Beam Pipe Support Structure in December 2006. The results of these tests and the design of final modules will be presented.

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