

Irradiation and beam tests qualification for ATLAS IBL Pixel Modules

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The upgrade for the ATLAS detector will undergo different phases towards HL-LHC. The first upgrade for the Pixel Detector will consist in the construction of a new pixel layer which will be installed during the first shutdown of the LHC machine (foreseen for 2013-14). The new detector, called Insertable B-Layer (IBL), will be inserted between the existing pixel detector and a new (smaller radius) beam-pipe at a radius of 3.2 cm. The IBL will require the development of several new technologies to cope with increase of radiation or pixel occupancy and also to improve the physics performance which will be achieved by reduction of the pixel size and of the material budget. Two different promising Silicon sensor technologies (Planar n-in-n and 3D) are currently under investigation for the pixel detector.

An overview of the sensor technologies qualification with particular emphasis on irradiation and beam tests will be presented.

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