Contribution ID: **29** Type: **not specified**

Status of 3D silicon pixel detectors for the ATLAS Forward Physics experiment (AFP)

Wednesday 18 February 2015 11:25 (20 minutes)

The ATLAS Forward Physics (AFP) project plans to install 3D silicon pixel detectors 210 m away from the interaction point and very close to the beamline at a radius of about 2-3 mm. This implies the need of slim edges in the order of 100 μm for the sensor side facing the beam to minimise the dead area. Another challenge is an expected non-uniform irradiation of the pixel sensors with high radiation levels of about 5e15 p/cm² close to the line of diffractively scattered protons and orders of magnitude lower for the detector parts away from it. To study if these requirements can be met using slightly-modified IBL FE-I4 3D pixel sensors, standard IBL devices are diced to obtain slim edges and are irradiated non-uniformly with protons. The resulting performance and the status of the project will be presented.

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Session Classification: 3D Sensors 1