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Double-Sided 3D Silicon Detectors for the High-Luminosity LHC

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For the ATLAS upgrade, the inner pixel layers will have to withstand fluences of up to 2E16 1MeV neq/cmˆ2. 3D detectors have been shown to be very radiation tolerant, and have been proposed as an option for the inner pixel layers for the ATLAS upgrade. This work presents studies done on double sided 3D strip detectors. Charge collection and noise measurements are presented before and after irradiation. Charge multiplication in 3D sensors is also investigated.

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