

Investigation of highly irradiated n⁺-in-n planar ATLAS pixel sensors

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Several FE-I3 sized n⁺-in-n single chip sensors have been irradiated to fluences up to $2 \cdot 10^{16} n_{eq}/cm^2$ which may possibly be reached in the inner ATLAS pixel layers in HL-LHC. To determine the scaling behaviour, the leakage current was measured depending on the voltage or on the temperature for individual sensors.

In addition to these measurements an FE-I3 n⁺-in-n single chip assembly irradiated to a fluence of $2 \cdot 10^{16} n_{eq}/cm^2$ was annealed in small steps to an overall time of 700 \,min at 60 °C. The impact on the leakage current and the collected charge was characterized.

The results obtained from this two studies are presented.

Primary author: GISEN, Andreas Justin (Technische Universitaet Dortmund (DE))

Presenter: GISEN, Andreas Justin (Technische Universitaet Dortmund (DE))

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