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Electrical Isolation of ITk Strip Sensors (student talk)

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Recording proton-proton collisions at the LHC requires cutting-edge detectors, custom-made for high energy physics applications. A new Inner Tracker (ITk) will be built for the ATLAS experiment to be able to resolve approximately 200 proton collisions simultaneously during the high-luminosity LHC phase. In order to minimize dead detector area, individual sensors need to be placed as close as possible while avoiding high voltage discharges between them.

I will present a case study for the ITk strip detector investigating possible discharges between bordering sensors. Current-voltage characteristics will be used to define a threshold voltage. This threshold voltage can be graphed as a function of gap width to reproduce Paschen's law and determine whether gas discharges will be problematic for ITk. The influence of glue spills and other contaminants in the inter-sensor gap will also be summarized.

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