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## Technological Developments on iLGAD Detectors for Tracking and Timing Applications

*Tuesday, 7 June 2016 12:00 (20 minutes)*

This presentation introduces the latest technological development on the Inverse Low Gain Avalanche Detector iLGAD as well as the first characterization results. This structure is based on the standard Avalanche Photo Diodes (APD) concept that includes an internal multiplication of the charge generated by radiation. The multiplication is inherent to the basic  $n^{++}-p^{+}-p$  structure, where the doping profile of the  $p^{+}$  layer is optimized to achieve high field and high impact ionization at the junction. In order to ensure a uniform electric field distribution along the device, the iLGAD is a pad-like LGAD with P-type multiplication layer below the  $N^{+}$  implant, in which we change the  $P^{+}$  implantation, by several P-type strips in order to segment the readout electrode, like a P-on-P microStrip detector. In this structure, we move the multiplication layer to the back-side of the chip, and define the ohmic readout elements, strips & pixels, in the front-side. That means the collecting current is dominated by holes instead of electrons.

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