Contribution ID: **8** Type: **not specified**

# [US] Deep Junction LGAD: a new approach to high granularity LGAD

*Thursday 4 June 2020 15:40 (20 minutes)*

Low Gain Avalanche Detectors (LGADs) are silicon detectors with modest internal gain (up to ˜50) that allows the sensor to be very thin (20-50 um). LGADs are characterized by an extremely good time resolution (down to 17ps), a fast rise time (˜500ps) and a very high repetition rate (˜1ns full charge collection). In a broad array of fields, including particle physics (4-D tracking) and photon science (X-ray imaging), LGADs are a promising R&D path. However, due to structures required to provide electrostatic isolation between LGAD pixels, the granularity of production-level devices is limited to the 1x1 mmˆ2 scale. However applications in particle physics and photon science demand granularity scales of 100x100 umˆ2 or better. Several promising approaches to improve this current limitation of LGADs are currently in R&D status. In this talk, we'll report an updated on a completely new idea involving a buried gain layer to overcome the current granularity limit: the DJ-LGAD.

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**Session Classification:** LGAD