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## Deep Junction LGAD: a new approach to high granularity LGAD

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Low Gain Avalanche Detectors (LGADs) are silicon detectors with modest internal gain (up to  $\sim 50$ ) that allows the sensor to be very thin (20-50  $\mu\text{m}$ ). LGADs are characterized by an extremely good time resolution (down to 17ps), a fast rise time ( $\sim 500\text{ps}$ ) and a very high repetition rate ( $\sim 1\text{ns}$  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  $1\times 1\text{ mm}^2$  scale. However applications in particle physics and photon science demand granularity scales of  $100\times 100\text{ }\mu\text{m}^2$  or better. Several promising approaches to improve this current limitation of LGADs are currently in R&D status. In this talk, we'll present a completely new idea involving a buried gain layer to overcome the current granularity limit: the DJ-LGAD.

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