Contribution ID: **11** Type: **not specified**

Deep Junction LGAD: a new approach to high granularity LGAD

Thursday 1 December 2022 14:10 (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. 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 present a recent new idea involving a buried gain layer to overcome the current granularity limit: the DJ-LGAD. The concept behind DJ-LGAD will be explained, then promising preliminary results from the first prototype production of DJ-LGADs will be shown.

Primary authors: SEIDEN, Abraham (University of California,Santa Cruz (US)); Prof. SCHUMM, Bruce Andrew (University of California,Santa Cruz (US)); GEE, Carolyn (University of California,Santa Cruz (US)); SADROZINSKI, Hartmut (SCIPP, UC santa Cruz); Dr OTT, Jennifer (University of California,Santa Cruz (US)); MAZZA, Simone Michele (University of California,Santa Cruz (US)); ZHAO, Yuzhan (University of California,Santa Cruz (US)); ZHAO, Yuzhan (University of California Santa Cruz)

Presenter: MAZZA, Simone Michele (University of California,Santa Cruz (US))

Session Classification: Low Gain Avalanche Detectors