Contribution ID: **19** Type: **Parallel session talk**

Time Resolution Studies of 4H-SiC LGADs for Fast Timing Applications

Thursday 9 October 2025 12:00 (20 minutes)

We report on the development and timing performance evaluation of 4H-SiC Low Gain Avalanche Detectors (LGADs), motivated by their potential for enhanced radiation hardness and fast signal response. The devices were fabricated on custom multi-layer epitaxial 4H-SiC wafers and feature etched termination and field plate designs to improve edge breakdown performance. Using UV-TCT, β-particle, and 40 MeV electron beam measurements, we systematically characterized the timing resolution of 4H-SiC LGADs. These results demonstrate the strong potential of SiC LGADs as a robust platform for precision timing in future 4D tracking detectors.

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Session Classification: RDC 3 Solid State Tracking

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