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## First survey of centimeter-scale AC-LGAD strip sensors with a 120 GeV proton beam

*Wednesday 1 March 2023 10:00 (20 minutes)*

We will present the first beam test results with centimeter-scale AC-LGAD strip sensors, using the Fermilab Test Beam Facility, and a study of the performance of AC-LGAD sensors as a function of their thickness. Sensors of this type are envisioned for applications that require large-area precision 4D tracking coverage with economical channel counts, including timing layers for the Electron Ion Collider (EIC), and space-based particle experiments. Long strip sensors with sparse readout offer better cost and performance for applications where channel count or electrical power density is a constraint. Thanks to the excellent signal to noise ratio in AC-LGADs, sparse readout can be exploited without significant degradation of spatial or time resolution, which is demonstrated in our studies. A survey of sensor designs is presented, with the aim of optimizing the electrode geometry for spatial resolution and timing performance. We will present our studies of the sensor geometry optimization to maintain the desirable sensor performance characteristics with increasingly larger electrodes.

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