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

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We present the results with large-area AC-LGAD strip sensors, using the Fermilab Test Beam Facility and sensors manufactured by the Brookhaven National Laboratory. 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. A survey of sensor designs is presented, with the aim of optimizing the electrode geometry for spatial resolution and timing performance. Several design considerations are discussed towards maintaining desirable signal characteristics with increasingly larger electrodes. The resolutions obtained with several prototypes are presented, reaching simultaneous 18 μm and 32 ps resolutions.

Early Career

No

Primary authors: TRICOLI, Alessandro (BNL); APRESYAN, Artur; MADRID, Christopher (Fermi National Accelerator Lab. (US)); SAN MARTÍN, Claudio (Universidad Técnica Federico Santa María); PENA, Cristian (FNAL); GIACOMINI, Gabriele (Brookhaven National Lab); KOSEYAN, Ohannes (University of Iowa); RIOS, Rene (Universidad Técnica Federico Santa María); HELLER, Ryan (LBNL); LOS, Sergey (Fermilab); NANDA, Shirsendu (UIC); XIE, Si (Fermi National Accelerator Laboratory); CHEN, Wei (BNL); BROOKS, William (Universidad Técnica Federico Santa María); YE, Zhenyu (UIC and LBNL)

Presenters: APRESYAN, Artur; PENA, Cristian (FNAL); XIE, Si (Fermi National Accelerator Laboratory)

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