

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

AC-Coupled Low Gain Avalanche Diodes (AC-LGAD) are silicon sensors that are designed primarily for 4D tracking applications at future particle colliders. These sensors are capable of providing fine temporal and spatial resolution. At the Electron-Ion Collider (EIC), this technology can be used to provide particle identification and tracking while keeping an economical channel count and low power density. We will present a survey of centimeter-scale AC-LGAD strip sensors, using 120 GeV protons from the Fermilab Test Beam Facility. A study of the performance of these sensors as a function of various parameters such as thickness, capacitance, etc. is presented with the aim of optimizing the sensor geometry to maintain the desired sensor performance characteristics with increasingly larger electrodes.

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