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Study of MUPIX Sensor Performance Using TCAD Simulation

The goal of the Mu3e experiment is to search for the lepton flavor violation (LFV) decay μ⟶eee with an ultimate sensitivity of one in 1016 μ-decays, four orders of magnitude larger than previous searches. The sensitivity will be achieved by a novel experimental design, fully exploiting the potential of High Voltage Monolithic Active Pixel Sensors (HV-MAPS). Technology CAD (or Technology Computer Aided Design, or TCAD) is a branch of electronic design automation that models semiconductor fabrication and semiconductor device operation to develop and optimize semiconductor processing technologies and devices. In this work, we present some of the results of used TCAD simulation in the pixel tracker of the Mu3e experiment. The IV characterization of the device is present and some of the electrical variables are determinate and use to understand some of the experimental results of the cheap test beam.

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