

Abstract Submitted  
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**Characterization of Single Event Latch-Up Cross Section in Prototype ALPIDE Sensor** FERNANDO TORALES - ACOSTA, State Univ of NY-Stony Brook — Particles containing heavy quarks are excellent probes into the full evolution of QGP, and the Inner Tracking System (ITS) of ALICE is responsible for detecting these short-lived heavy particles by measuring their impact parameter, the point at which they decay relative to the initial collision. ALPIDE is a next generation monolithic active pixel sensor (MAPS) designed for the ALICE ITS upgrade in 2018 that would increase the impact parameter resolution and readout speed of the ITS. Like most silicon using CMOS technology, however, ALPIDE can suffer from single event latch-up. The aim of this experiment was to measure the cross section of latch-up in a prototype ALPIDE sensor using the 88" cyclotron facility at Lawrence Berkeley National Laboratory. High statistics in a range of ions with low linear energy transfers (LETs) were needed to characterize the onset curve of latch-up in the sensor. It was found that latch-up occurred with reasonable statistics at LETs as low as  $5 \text{ MeV}/(\text{mg}/\text{cm}^2)$ . The sensor, however, undergoes a power cycle after each latch-up. As a result, significant dead time correction was required for accurate calculation of the sensor's cross section. Potential damage to the sensor from a particularly strong latch-up was also observed.

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