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Reliability testing of the End-of-Substructure card for operation within the ATLAS Inner Tracker

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This study presents the results of irradiation tests used to qualify the End-of-Substructure (EoS) card for operation within the ATLAS Inner Tracker (ITk) at the High Luminosity Large Hadron Collider (HL-LHC). The EoS card is responsible for interfacing the data, command, and power signals between on and off-detector electronics. The radiation environment within the ITk poses a challenge for electronics as energized particles are capable of upsetting the logic, referred to as Single Event Upsets (SEU), of the constituent components, resulting in corrupted data. The irradiation test setup at the University of Cape Town is outlined and the steps taken in the experiments are discussed. The results found indicate that one of the primary ASICs on the EoS card is susceptible to SEUs under experimental conditions.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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