ATLAS SCT Readout and Barrel Macro-assembly Testing and Design of MAPS Test Structures

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Abstract

The semiconductor tracker sub-detector of the ATLAS experiment consists of 4088 individual silicon detector modules. A data acquisition system, SctRodDaq, required to configure, read out and test these modules both during large scale assembly and in the final experimental setting was designed, and is described here. SctRodDaq is shown to function well during assembly of the first stage of the SCT, Barrel 3.

The design and layout of pixel test structures to further the development of Monolithic Active Pixel Sensors for particle physics applications is described. Preliminary test results of the device show promise though they demonstrate the requirement of a relatively thin epitaxial layer for particle detection applications.