

Systematic Study of Micro-Discharge Characteristics of ATLAS Silicon Microstrip Modules

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Abstract

One of the critical issues in fabricating silicon microstrip detectors is to suppress the micro-discharge, a rapid increase of leak current when the bias voltage is raised. Among the 981 silicon microstrip modules fabricated by the ATLAS SCT Japan group, 105 modules showed the micro-discharge below 500 V bias at least once in the series of the quality assurance testing. We have conducted a systematic study on these modules to characterize the effects, including the hot spot localization using an infrared sensitive camera.