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Commissioning of the ATLAS Semiconductor Tracker with Cosmic Rays

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The Semiconductor Tracker(SCT) of the ATLAS detector enters the last phase of installation and commissioning at CERN. Prior to inserting into ATLAS, the barrel part of the SCT has been integrated with the Transition Radiation Tracker (TRT) barrel and tested with cosmic rays. A sector of 468 SCT modules has been powered and read simultaneously with TRT modules in physics mode. In total 500 thousand events were recorded during cosmic runs and processed with the ATLAS off-line reconstruction software. The SCT performance was measured in terms of the average noise occupancy per channel ($4.5 \cdot 10^{-5}$), the overall efficiency ($> 99\%$). The tests with cosmic rays proved full functionality of the complex Detector Control System(DCS) which provides control, monitoring and safety functions for the detector electronics. The results of SCT barrel tests with cosmic rays will be presented as well as operational experience of running the fully integrated silicon detector during the commissioning of the completed SCT.

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