



Contribution ID: 36

Type: **Contributed Talk**

The CDF Silicon Detector: Performance and Longevity

Wednesday 21 February 2007 14:50 (20 minutes)

The CDF silicon vertex detector is one of the largest operating silicon detectors in particle physics. Its silicon sensors have 722,432 channels read out by 5,456 chips and cover an area of 6 m². The detector is used for precision tracking and in the hardware trigger for events with a displaced vertex. It is very important for a success of the CDF physics program. The silicon detector has played a critical role in the first measurement of the B_s mixing. This presentation includes a brief review of the detector performance and mainly focuses on issues of longevity and effects of radiation damage. This is of particular importance as the CDF experiment will be operating until the end of Tevatron Run II in 2009, with an expected integrated luminosity of 5–8 fb⁻¹, which exceeds the initial design goal for the detector to be radiation hard for operation with a delivered luminosity of up to 3 fb⁻¹. We present a detailed analysis of the time evolution of bias currents, depletion voltages, and signal-to-noise ratios, which indicate that the CDF silicon detector should outlast Run II without major degradation of performance.

Author: PRONKO, Alexandre (FNAL)

Presenter: PRONKO, Alexandre (FNAL)

Session Classification: Session 6