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Performance and Longevity Studies of the Silicon Detector of the CDF Experiment ROBERTO MARTINEZ BALLARIN, OSCAR GONZALEZ LOPEZ, IGNACIO REDONDO FERNANDEZ, CIEMAT, CDF COLLABORATION — The CDF Silicon Detector is a system devoted to make precision tracking and vertex measurements. The silicon detector is used in regular data taking, having collected more than 3.0 fb^{-1} of data during the Run II of the Tevatron Collider at Fermilab. The silicon detector is exposed to extreme conditions of irradiation so it provides an exceptional opportunity to study the effects of a prolonged high-radiation environment on silicon sensors. In this talk we describe the tools and comment the results obtained at CDF to monitor and investigate the evolution of the silicon detector performance as radiation damage becomes more severe, specifically after the innermost layers of the detector have crossed the so-called inversion point.

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