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Radiation Damage Studies of the D0 Silicon Microstrip Tracker SUNGWOO YOUN, Fermi National Accelerator Laboratory, D0 COLLABORATION — The Silicon Micro-strip Tracker (SMT) at the D0 experiment at Fermilab (Batavia, IL) has been operated since 2001. An additional silicon layer, referred to as "Layer 0", was installed within the original innermost SMT layer in 2006 to improve impact parameter resolution and compensate for detector aging due to radiation damage. Various properties of the silicon sensors have been monitored on a regular basis while they were being irradiated through 2011 when the final Tevatron collisions occurred. At the end of 2011, the SMT was warmed from its nominal operating temperature up to 16 C and measurements have been continued for the Layer 0 sensors to monitor annealing effects. We present the results of the radiation damage study and the subsequent annealing study.

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