

Online Radiation Dose Measurement System for ATLAS experiment

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In LHC experiments it will be important to continuously monitor the radiation doses to follow the level of degradation of detectors and electronics and to correctly predict future radiation damage. A system for online radiation monitoring using semiconductor radiation sensors was installed in the ATLAS experiment. Ionizing dose in SiO₂ will be measured from increase of threshold voltage in p-MOS FET transistors (RadFETs). The 1 MeV neutron equivalent fluences will be monitored from increase of forward voltage at given forward current in two types of p-i-n diodes and from measurements of increase of reverse current in 25 μm thick epitaxial pad diode. From measurements of degradation of current gain in dedicated transistors fluence of thermal neutrons will be estimated. In this contribution the system will be described and the results from long irradiation test in IRRAD6 at CERN will be shown.

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