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Poster
The Radiation Physics Laboratory at OSU with support from NASA SWR2O2R program is developing ionizing radiation dosimeters for use aboard aircraft, UAVs and high altitude balloons. The Atmospheric Ionizing Radiation Tissue Equivalent Dosimeter (AirTED) is a low cost, compact ionizing radiation detector consists of a tissue equivalent proportional counter (TEPC) to measure high LET radiation including secondary neutrons, primary and secondary protons and heavy ions, and a Si PIN photodiode to measure low LET radiation including x-/gamma-rays, electrons and positrons. The Atmospheric ionizing Radiation Silicon Dosimeter (AirSiD) is a light-weight, battery-powered radiation spectrometer using only a Si PIN photodiode. A space-flight qualified version of AirTED (SpaceTED) recently completed a one year experiment aboard the ISS and results from this experiment is being used to develop and refine methods of combining the data measured by the TEPC and Si diode into a single lineal energy spectrum in order to determine total absorbed dose and dose equivalent. Three test flights of the AirSiD dosimeter aboard stratospheric solar balloons were carried out in summer 2024 over central Oklahoma. Results from these flights were systematically slightly lower than model estimates made using the CARI-7A code, probably due to the lack of inclusion of the neutron component in the AirSiD measurement. Both AirTED and AirSiD were calibrated at the HIMAC heavy ion accelerator in Japan and AirTED was used to characterize the Neutron Irradiation Facility at TRIUMF in Canada.

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