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VISION - A MODULAR PLATFORM FOR RADIATION ENVIRONMENT MAPPING IN LOW EARTH ORBIT

Abstract

In the past few years the number of small satellite missions deployed in Low Earth Orbit has increased significantly. A growing proportion of those satellite are relying on commercial off the shelf components to accomplish their missions while they are often not rated for space environment The Vision project aims to map the fluence of ionizing particles in low earth orbit and measure the effects of these particles on standard components.

In the first phase of the project the team is developing a 1U nanosatellite equipped with multiple timepix sensors, providing data regarding the fluence of ionizing particles. The satellite will evaluate the fluence of particles on the outside of the spacecraft and behind an equivalent of 2mm aluminum shielding. two timepix sensors will be used to measure the fluence on the outside and behind shielding. Those two measurements will allow the team to evaluate the proportion of particule among the integral spectrum that have enough energy to reach through the shielding and correlate that information with simulation data provided by the Spenvis project.

In addition to those measurements, two sets of components will also be exposed to ionizing particles in order to evaluate their susceptibility to Single event and Total ionizing dose.

This presentation will present the Vision project and the Vision payload 1 in order to gather interest and feedback while the payload is being engineered and tested.