Contribution ID: **45** Type: **not specified**

Damage to Electronics - Radiation Hardness Assurance

Wednesday 25 October 2023 15:30 (1h 25m)

The primary manners in which radiation can cause degradation of electronic devices and systems are through total-dose ionizing-radiation damage, single-event related soft and hard errors, and displacement damage. A rigorous methodology is needed to ensure that the radiation environment does not compromise the functionality and performance of the electronic systems during their life. This methodology is called Radiation Hardness Assurance (RHA). It consists of those activities undertaken to ensure that the electronic piece-parts placed in the space system perform to their design specifications after exposure to the radiation environment. It deals with system requirements, environmental definition, part selection, part testing, shielding and radiation tolerant design. All these elements should play together to produce a system tolerant to the radiation environment. In this lecture, principles of RHA for the three main radiation effects are presented. Finally, lessons learned in the application of this methodology over the past 30 years and the challenges ahead are presented.

This lecture is focused on space environment and applications, but the basic principles of RHA are applicable to any kind of radiation environment.

Presenter: POIVEY, Christian (ESA ESTEC)