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## Modelling and testing the effects of space radiation on space borne electronic components

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**Abstract content (Max 300 words) - Formatting & Special chars**

Outer space is a hazardous environment for satellites as they are continuously exposed to harsh space radiation in the form of cosmic rays and high energetic electrically charged particles (protons, electrons and alpha particles). Mission-critical electronic components are especially susceptible to space radiation as high velocity and mass/charge impact on molecular-sized circuitry can cause significant command upsets or permanent damage, compromising the satellite's functional integrity. To mitigate radiation hazard risk, electronics are carefully selected, radiation-shielded and rigorously tested prior to deployment.

This project aims to describe the space radiation environment and use platforms such as SPENVIS to model radiation levels at satellite orbital altitudes. Modelled radiation values such as total dose will then be used in relevant laboratory radiation tests (iThemba Labs) of selected electronic components. Appropriateness for space use of the tested components will be evaluated by, inter alia, comparing test results with published proton cross-section profiles for selected or similar components. A report on the appropriateness and correct use of relevant space radiation models will be given, and elementary simulation of satellite radiation shielding will be conducted.

The presentation will outline the theory behind the project, as well as information about the experimental procedure that will be carried out.

**Apply to be considered for a student award (Yes / No)?**

Yes

**Level for award (Hons, MSc, PhD, N/A)?**

MSc

**Main supervisor (name and email) and his / her institution**

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**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

Yes

**Please indicate whether<br>this abstract may be<br>published online<br>(Yes / No)**

Yes

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