

**Master Thesis Work**

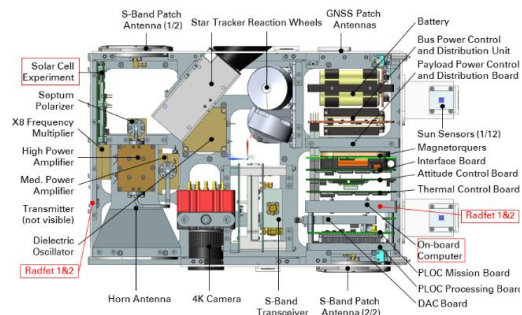
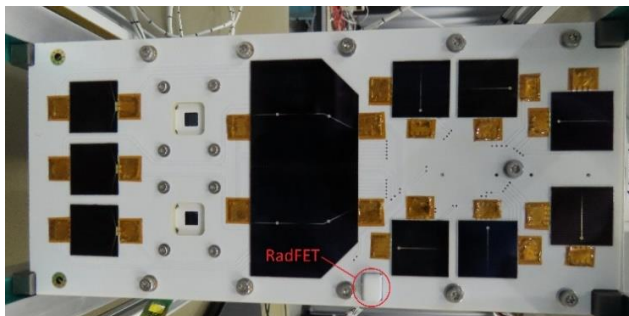
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**Strahlungstransport und Strahlungseffekte der EIVE Strahlungsdosimeter**  
**Radiation Transport and Effects on the EIVE Radiation Dosimeter**

Motivation:

The EIVE CubeSat carries a set of technology demonstration payloads as well as four RadFET chip dosimeters. The expected launch date is set for May 2023 into a sun synchronous low earth orbit of 525 km altitude. The dosimeters are distributed on two spots near the surface on and below the solar cell experiment as well as within the on-board computer housing within the satellite. Due to the different locations of the sensors, different radiation intensities due to the shielding effects of the satellite structure are expected. Moreover, the different species of ionizing radiation (gamma ray, electrons, protons) will be impacted differently by the available shielding.

The goal of the thesis is to develop a simplified 3D geometry of the satellite to conduct a 3D Monte Carlo radiation transport simulation. Thus, the expected radiation species at the site of the dosimeters and their effects on the dosimeter can be estimated which will help the interpretation of the measurement data once they are available.



Task description of the Master thesis work:

- Introduction to radiation effects and transport
- Selection of the required radiation simulation approach and tools (examples: Spenvis/OMERE (2D), NOVICE/MCNPX/Geant4 (3D))
- Geometry simplification, simulation setup and computation
- Interpretation of results and prediction of the expected radiation environment for each dosimeter
- Documentation

Supervisor: Markus Koller

Starting date: as soon as possible

Submission until: [Click for date](#)

**Acknowledgement of receipt:**

I hereby confirm that I read and understood the task of the master thesis, the juridical regulations as well as the study- and exam regulations.

\_\_\_\_\_  
 Date  
 Prof. Dr.-Ing. Sabine Klinkner  
 (Responsible Professor)

\_\_\_\_\_  
 Date  
 Signature of the student

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