



# DOSIS 3D MINI



## Brief description

The **DOSIS 3D MINI** experiment seeks to enlarge our understanding of the radiation environment onboard the ISS. We will measure the radiation load at 10 locations outside the Columbus Laboratory and combine this dataset with the long term data set generated within the **DOSIS 3D** experiment in Columbus to enable a three-dimensional dose mapping throughout the Station.



## Why on the ISS?

- To measure the radiation load outside the Columbus laboratory of the ISS
- Radiation loads onboard the ISS are over a factor of 200 higher than on Earth



## Applications and prospects



### Space

- Increase the knowledge of the radiation loads inside the ISS
- Create further data to benchmark radiation transport calculations



### Earth

- Use the space radiation environment as testbed for radiation detectors with applications in radiation therapy



## Parties involved

DLR Institute of Aerospace Medicine with colleagues from AT, HU, PL, BE, CH, CZ, JP, RU, US



## Facts and figures

- **Launch:** Crew-3 (Crew Dragon), November 2021
- **Return:** Crew-3 (Crew Dragon), April 2022
- **Upload volume:** 30 x 8.5 x 8.5 cm<sup>3</sup>
- **Upload mass:** 650 gram
- **Properties:** Passive radiation detectors
- **Measurement locations:** outside the Columbus Laboratory of the International Space Station
- **Measurement duration:** ~180 days

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DOSIS 3D  
MINI



# DOSIS 3D MINI

## Experiment



### DLR-ME DOSIS 3D MINI

Since 2012, the DLR Institute of Aerospace Medicine together with international partners has been conducting the **DOSIS 3D** experiment in the Columbus laboratory of the ISS. The goal of this project is to determine the radiation distribution in the Columbus laboratory with passive and active radiation detectors. For these measurements, 11 passive radiation detector packages (so called PDPs) are brought to the ISS every six months, where they then measure the radiation load at these dedicated positions in Columbus for half a year. The PDPs are often referred to as the “orange pouches” due to the fact, that the radiation detectors are sewed into orange Nomex. The Matthias Maurer mission now offers scientists the opportunity to extend **DOSIS 3D** to other areas of the ISS. As part of the **DOSIS 3D MINI** experiment, a second set of detectors will fly with Matthias to the ISS in addition to the detectors that will be mounted in the Columbus laboratory. This second set will then be installed by Matthias in the US, Russian and Leonardo modules of the ISS and will complete the measurements in the European Columbus laboratory. Thus, during the Matthias Maurer mission, radiation will be measured at 21 locations within the ISS as part of this international collaboration, generating further data to complete a 3D dose distribution model of the ISS.