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**UNIVERSITÄT
BERN**

Institute of Applied Physics

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Master and Bachelor Theses in Microwave Remote Sensing

The Microwave Physics group at the Institute of Applied Physics develops sensitive millimeter wave radiometers for atmospheric remote sensing applications and uses them to study stratospheric ozone, water vapor, temperatures and winds. We are also developing the calibration units and optics for the THz instrument SWI on the ESA Jupiter mission JUICE and for different microwave sounders on Earth observing satellites for numerical weather prediction and climate sciences.

We currently offer Master and Bachelor projects on the following topics:

- Polarimetric calibration of a novel 50 GHz radiometer for the observation of stratospheric temperatures and the Zeeman splitting of Oxygen emission lines by the Earth magnetic field
- THz calibration targets for the Jupiter mission JUICE: Experimental characterization of temperature gradients and their numerical simulation using finite element analysis software COMSOL
- Characterization of internal and external radiometric calibration devices for an upcoming ESA mission
- Upgrade of the Radio Telescope lab course for pulsar observations and interferometry
- Remote sensing of precipitation with a micro rain radar
- Investigation of Arctic dynamics and its relation to ozone and water vapor observed with our GROMOS-C and MIAWARA-C instruments on Svalbard
- Full wave scattering modeling of meteoric plasmas and analysis of meteor radar data
- Gravity wave analysis from tomographic 3DVAR retrievals using multi-static meteor radar networks
- Studying of Mesospheric/Stratospheric dynamics above the alpine region using the wind radiometers WIRA and WIRA-C and its impact on trace gases

For more information, please contact the head of the IAP Microwave Physics Division, Dr. Axel Murk.