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UNIVERSITÄT BERN

Seminar über Microwave Physics and Atmospheric Physics

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Titel: Characterisation of Internal Calibration Subsystems for Space Based Microwave Radiometers at Millimetre Wave Frequencies

Microwave radiometers operating at millimetre-wave frequencies on satellite platforms are typically calibrated using an on-board hot calibration target and a view to cold space. Pointing the radiometer beam to these targets requires rotating or flipping optical elements that add to the mechanical and optical complexity of the instrument. The size of the on-board targets and the required mechanisms may prohibit their use in small satellites. Moreover, such mechanisms are superfluous for nadir-pointing altimetry radiometers that are typically included in satellite radar altimetry missions. We have developed an internal calibration subsystem (ICSS) operating in the W-band that is integrated in the frontend of a radiometer: the calibration signals are generated by noise diodes and matched waveguide loads and coupled to the receiver by RF switches and directional couplers. The brightness temperatures of the calibration signals and their dependency on the operating temperature, the isolation of the switches, as well as the transient behavior of the noise diodes and the switches have been determined using a temperature stabilised radiometric testbed and accurate external calibration loads. In this talk, the ICSS and the testbed are described and the results of the characterisation campaign of the ICSS are presented.

Zeit: Friday 03.05.2024, 10:15 Uhr

Ort: Room A97
https://unibe-ch.zoom.us/j/97081325603?pwd=d0ozME5xOS9pQVNxallLem81VHQyZz09
Meeting ID: 970 8132 5603
Passcode: iapmw