

Seminar über Microwave Physics and Atmospheric Physics

Referent/in: Dr. Lorenzo Ciorba, Institute of Electronics, Computer and Telecommunication Engineering (IEIIT), Torino, Italy

A new era in astronomy will begin when the first sky images will be taken by the Square Kilometre Array (SKA). The SKA-Low will address some of the key problems of astrophysics and cosmology covering the low-frequency part of the SKA (50 - 350 MHz). This powerful sensor will provide a huge amount of data and information to the scientific community. One full SKA-Low station consists of 256 digital-beam-formed dual-polarized antennas randomly distributed on a 40-m size area. Of course, such an impressive instrument requires a very accurate characterization in order to guarantee properly calibrated measurements.

In recent years, the Unmanned Aerial Vehicle (UAV) technology has been experimented as antenna measurement solution thanks to its portability, low cost, and ability to perform arbitrary paths. Using UAVs, previously mentioned large instruments can be characterized in situ through high signal-to-noise ratio and high dynamic range measurements. The increased flexibility is also capable of end-to-end system verification.

In this talk, UAV-based antenna measurements will be discussed. Far-field and near-field techniques to obtain the radiation pattern of the instrument under test will be presented and analyzed. In particular, an inverse source near-field far-field transformation will be applied to UAV-based near-field measurements of a SKA prototype. The promising results suggest the usage of the presented technique in other applications such as radars, base stations and satellite antenna measurements.

Zeit: Freitag, 28. April 2023, 10:15 Uhr

Ort: Room A97, ExWi, Sidlerstrasse 5, 3012 Bern
<https://unibe-ch.zoom.us/j/97081325603?pwd=d0ozME5xOS9pQVNxallLem81VHQyZz09>
Meeting ID: 970 8132 5603
Passcode: iapmw