Universität Bern
Institut für Angewandte Physik
Sidlerstrasse 5
3012 Bern, Schweiz

Telefon: +41 (0)31 631 89 11
E-Mail: iapemail@iap.unibe.ch
www.iap.unibe.ch

UNIVERSITÄT BERN

Microwave Physics and Atmospheric Physics

Referent/in/speaker: Jennifer Studer, ETHZ

Titel/title: The Hydrogen Intensity and Real-time Analysis eXperiment (HIRAX) Telescope - Overview and Metrology

The Hydrogen Intensity and Real-time Analysis eXperiment (HIRAX) radio interferometer array aims to observe neutral hydrogen (HI) through intensity mapping (IM) in the redshift range of 0.775-2.55. It is currently being built at the South African Radio Astronomy Observatory (SARAO) Square Kilometer Array (SKA) site in South Africa. HI IM makes it possible to tomographically probe large, cosmological volumes, enabling constraints on, for example, the dark energy equation of state. I will present an overview of the HIRAX instrument. Where, I will focus on the measurement of the dish surfaces from which we propagate the primary beam systematics. As systematics are a significant concern in deriving cosmological constraints from HI IM, instrumental effects need to be carefully controlled and monitored with metrological measurements. For the surface measurement of the reflector we use three different measurement devices: laser tracker, photogrammetry and a reflectometer. With these we can also monitor how the dish surface, and hence the primary beam, changes with time, temperature, gravity, etc.
I will discuss the design, instrument characterization and analysis challenges with a focus on the current status of the array, dish production and metrological measurements. This is an especially exciting period for HIRAX, as the array is now in its commissioning phase, with first light expected this year.

Zeit/time: Friday, March 13, 2026, 10:15

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