

PHYSICS COLLOQUIUM

Speaker: **Prof. Matthias Hoefft**
Thüringer Landessternwarte Tautenburg (TLS)
Universität Leipzig



Topic: **Exploring cosmic magnetism with a new generation of radio telescopes**

Time and Tuesday, November 25, 2025, **2:50 pm** – hybrid event

place: **The colloquium will be held in REC/C213.**

Online participation possible:

Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-WiSe25

<https://tu-dresden.zoom-x.de/j/63138178900?pwd=TIImGawPz1dtDA6VzO2N1XdqgI7bE6b.1>

Host: Prof. Daniel Bemmerer

Abstract: Radio astronomy is undergoing a dramatic change, with new large international telescopes coming online. I will briefly review the capabilities of a few of these, including the upgraded Low Frequency Array (LOFAR 2.0), the MeerKAT array and the Square Kilometre Array, which is currently under construction. These new interferometers enable us to observe the sky at radio wavelengths with unparalleled resolution and sensitivity. LOFAR, of which the Thüringer Landessternwarte operates one international station, has transformed our ability to study the sky at the longest wavelengths that can be observed with ground-based telescopes. These new instruments enable us to study magnetic fields and relativistic electrons on the largest cosmological scales, i.e. in galaxy clusters and cosmic filaments. Magnetisation, characterised by its Faraday spectrum, is an excellent indicator of how the intergalactic medium has evolved. However, the structure and strength of magnetic fields remain poorly understood. The new telescopes will enable us to gain a much clearer understanding of cosmic magnetism. I will demonstrate this by presenting a study of the polarisation of diffuse radio emission in a merging galaxy cluster, which illustrates what can be learned about magnetic fields in galaxy clusters.

Bio: Matthias Hoefft received his PhD in 2001 at the Astrophysikalisches Institut Potsdam. Thereafter, he was: 2001 - 2007 Research Fellow at Jacobs University Bremen, 2008 Postdoctoral fellow at Astrophysikalisches Institut Potsdam, and since 2008 Staff scientist at Thüringer Landessternwarte Tautenburg, since 2018 deputy director. Further activities: Chair of the German Long Wavelength Consortium (GLOW), Board member of the Verein für datenintensive Radioastronomie e.V., Council member of the LOFAR European Research Infrastructure

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Consortium, Steering Committee member of the MPIfR MeerKAT Galactic Plane Survey, Member of the LOFAR Two-metre Sky Survey Consortium, Member of the MeerKLASS Consortium.