



## Institute for Space Weather Sciences Colloquium

**Thursday, 24<sup>th</sup> of October 2024, 1pm ET**

meeting ID: 917 2169 7568, password: isws

**Carsten Denker**, Leibniz Institute for Astrophysics Potsdam (AIP)

### **Synoptic Solar Observations: The Ground-based Perspective**

Ground-based telescopes and networks for synoptic solar observations have been essential for helioseismology and solar activity studies. The presentation gives an overview of existing facilities and new projects, which will reshape the landscape of synoptic telescopes and instrumentations, broadening the science capabilities. In addition, the potential of intermediate- sized telescope will be investigated, which bridge the gap between high-resolution and synoptic telescopes.



Carsten Denker is head of the research section Solar Physics at the Leibniz Institute for Astrophysics Potsdam (AIP) and Professor at the Institute for Physics and Astronomy at the University Potsdam, Germany. His research focus is solar physics and instrumentation. Research interests are mainly concerned with photospheric and chromospheric magnetic fields and solar activity – in particular with the fine structure of sunspots and the interaction of plasma motions and magnetic fields at the fundamental scales of solar physics. In addition, research on solar cycle variations connects to the broader themes of solar-terrestrial relations and space weather prediction and forecast. The instrument portfolio includes high-cadence imagers (HiFI: High-resolution Fast Imager and H $\alpha$  Imager M-lite) and devices for imaging spectropolarimetry (GFPI: GREGOR Fabry-Pérot Interferometer) at the GREGOR solar telescope and camera systems for multi-wavelength spectroscopy (FaMuLUS: Fast Multi-Line Universal Spectrograph) at the Vacuum Tower Telescope (VTT). Software development includes data reduction pipelines for the aforementioned instruments and data analysis tools for site surveys, adaptive optics, image restoration, spectral inversion, and machine learning.