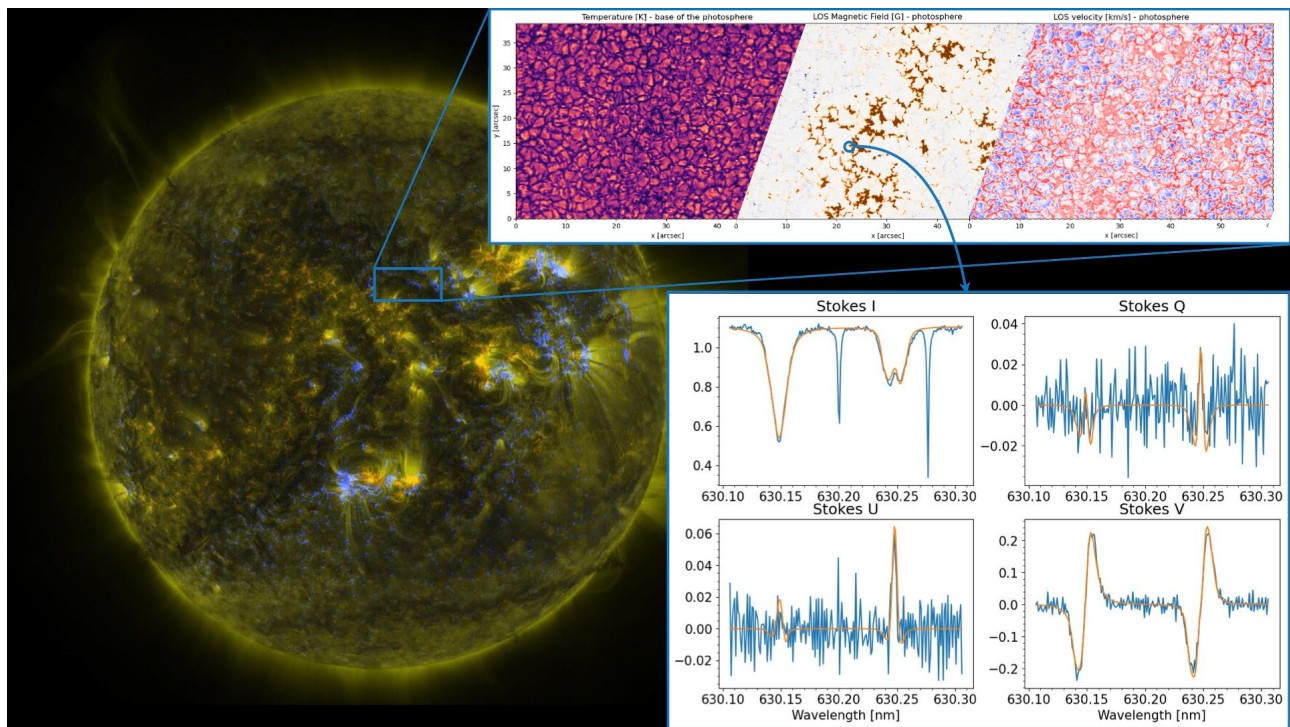


PHYSIKALISCHES KOLLOQUIUM

AM 27. OKTOBER 2025 UM 16 UHR C.T.
IM GROßEN HÖRSAAL



SPECTRAL LINE POLARIZATION: A WINDOW INTO THE PHYSICS OF THE SOLAR ATMOSPHERE

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Most of what we know about astrophysical objects comes from analyzing the light they emit. In the case of the Sun and other stars, the observed spectrum arises from a complex interplay between absorption, emission, and scattering processes that shape its wavelength distribution and polarization state. Furthermore, the magnetic field permeating the plasma in the solar atmosphere alters the polarization of the light through Zeeman and Hanle effects, imprinting characteristic signatures in our observations. In this talk, we will delve into the radiative transfer formalism and atomic processes to describe the spectral line formation in the solar atmosphere. We will discuss spectral line formation under non-local thermodynamic equilibrium (non-LTE) conditions, and explore scattering polarization as a natural consequence of these plasma conditions. Finally, we will showcase the diagnostic techniques that rely on these atomic processes and high-resolution observations to probe the solar atmosphere in time and space.

AKTUELLE INFORMATIONEN FINDEN SIE HIER: WWW.PHYSIK.UNI-FREIBURG.DE