

# Aktuelle Veranstaltungen

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## Kolloquium

**Thema:** [Coupling electrons and light in electron microscopy](#)

**Datum:** 14.06.21

**Uhrzeit:** 16:15

**Ort:** cyberspace

**Vortragender:** [Prof. Claus Ropers](#)

GWDG Göttingen

**Inhalt:**

The interaction of electrons and light is an integral part of our everyday experience. Microscopically, bound electrons in atoms and molecules can change their quantum state by absorbing and emitting photons. A free electron, however, cannot simply absorb a propagating photon, as the photon of a given energy does not carry sufficient momentum. In other words, energy and momentum conservation cannot be simultaneously fulfilled in this process. However, if the light field is confined to subwavelength dimensions, the situation dramatically changes: Electrons passing through an optical near field can both emit and absorb multiple photon energies, creating discrete energetic sidebands in the electron spectrum. This mechanism is at the heart of recent developments combining optical spectroscopy with electron microscopy. In this talk, I will introduce basic principles and selected applications of inelastic electron-light scattering in electron microscopy. Besides the nanoscale imaging of optical fields, the mechanisms described allow for a coherent control of the electron quantum state, spatial and temporal electron beam manipulation, and the preparation of attosecond electron bunches. Finally, recent progress in the coupling of electron beams to whispering gallery mode resonators and related future prospects will be discussed.

**Ansprechpartner:** [W. Pfeiffer](#)

## Kolloquium Mathematische Physik

**Thema:** 20210723 - Jon Keating - TBC

**Datum:** 23.07.21

**Uhrzeit:** 16:15

**Ort:** ZOOM/Konferenzschaltung

**Vortragender:** [Jon Keating](#)

Oxford University

**Inhalt:** TBC

**Ansprechpartner:** [G. Akemann](#)

## Seminar Hochenergiephysik

**Thema:** [Is Our Universe the Remnant of Chiral Anomaly in Inflation?](#)

**Datum:** 27.04.21

**Uhrzeit:** 14:15

**Ort:** Online, via ZOOM

**Vortragender:** [Azadeh Maleknejad](#)

CERN, Geneva

**Inhalt:** Modern cosmology has been remarkably successful in describing the Universe from a second after the Big Bang until today. However, its physics before that time is still much less certain. It profoundly involves particle theory beyond the Standard Model to explain long-standing puzzles: the origin of the observed matter asymmetry, nature of dark matter, massive neutrinos, and cosmic inflation. In this talk, I will explain that a new framework based on embedding axion-inflation in left-right symmetric gauge extensions of the SM can possibly solve and relate these seemingly unrelated mysteries of modern cosmology. The baryon asymmetry and dark matter today are remnants of a pure quantum effect (chiral anomaly) in inflation which is the source of CP violation in inflation. As a smoking gun, this setup has robust observable signatures for the GW

background to be probed by future CMB missions and laser interferometer detectors.

**Ansprechpartner:** [D. Bödeker](#)

## **Seminar Kondensierte Materie**

**Thema:** **Correlation-Enhanced Neural Networks as Interpretable Variational Quantum States**

**Datum:** 01.07.21

**Uhrzeit:** 14:15

**Ort:** ZOOM / Konferenzschaltung

**Vortragender:** [Agnes Valenti](#)

ETH Zürich

**Inhalt:**

**Ansprechpartner:** [Jürgen Schnack](#)

## **Seminar Mathematische Physik**

**Thema:** **The Character Expansion in effective Theories for chiral Symmetry Breaking**

**Datum:** 03.12.20

**Uhrzeit:** 16:30

**Ort:** ZOOM / Konferenzschaltung

**Vortragender:** [Noah Aygün](#)

Universität Bielefeld

**Inhalt:**

**Ansprechpartner:** [Gernot Akemann](#)

## **Seminar Bielefeld-Melbourne Zufallsmatrizen**

**Thema:** [Real eigenvalues of elliptic random matrices](#)

**Datum:** 16.06.21

**Uhrzeit:** 09:00

**Ort:** ZOOM / Konferenzschaltung

**Vortragender:** Sung-Soo Byun

Seoul National University

**Inhalt:** In this talk, I will discuss the real eigenvalues of the real elliptic Ginibre matrix, the model which provides a natural bridge between Hermitian and non-Hermitian random matrix theories. In the almost-Hermitian regime pioneered by Fyodorov, Khoruzhenko and Sommers, I will present the large-N expansion of the mean and the variance of the number of real eigenvalues. Furthermore I will explain the limiting empirical distributions of the real eigenvalues which interpolate the Wigner semicircle law and the uniform distribution. The proofs are based on the skew-orthogonal representation of the correlation kernel due to Forrester and Nagao. This is a joint work with Nam-Gyu Kang (KIAS), Ji Oon Lee (KAIST) and Jinyeop Lee (LMU).

**Ansprechpartner:** [Gernot Akemann](#)