

Aktuelle Veranstaltungen

Kolloquium

- Thema:** [Antrittsvorlesung: Direct look at charge, lattice and spin dynamics in solids with ultrafast terahertz spectroscopy](#)
- Datum:** 17.06.19
- Uhrzeit:** 16:15
- Ort:** H6
- Vortragender:** [Prof. Dr. Dmitry Turchinovich](#)

Universität Bielefeld

- Inhalt:** Many elementary processes in electron, phonon and spin subsystems of a solid: e.g. elementary acts of conduction, lattice oscillation periods, spin dynamics etc, occur on the ultrafast timescale of 10s of femtoseconds up to a few picoseconds. This timescale τ matches the terahertz (THz) frequency range, broadly defined as $\omega/2\pi \sim 0.1 - 30$ THz, and corresponding to the period of oscillation of electromagnetic fields in the range ~ 10 ps - 30 fs, or to the photon energies of $\sim 0.4 - 120$ meV. This facilitates the use of THz radiation for spectroscopy in a unique regime of $\omega\tau \sim 1$, where the elementary ultrafast dynamics in condensed matter can be directly resolved. Based on modern femtosecond laser technology, ultrafast THz spectroscopy allows one to directly probe equilibrium and non-equilibrium dynamics of charge, lattice and spins with temporal resolution down to 10s of femtoseconds, in a contact-free and non-destructive fashion. In this presentation, after an introduction to the method, we will review some of our recent case studies: (i) ultrafast linear and nonlinear electron conduction in graphene, in particular leading to highly efficient THz high harmonic generation, and (ii) spin-dependent electron transport in ferromagnetic metals.

Ansprechpartner: [Dekan](#)

Kolloquium Mathematische Physik

Thema: [tba](#)

Datum: 05.07.19

Uhrzeit: 16:15

Ort: V3-204

Vortragender: Dirk Hundertmark

KIT

Inhalt:

Ansprechpartner: [M. Baake](#)

Seminar Hochenergiephysik

Thema: **tba**

Datum: 09.07.19

Uhrzeit: 14:15

Ort: D6-135

Vortragender: [Karl Jansen](#)

DESY Zeuthen

Inhalt:

Ansprechpartner: [W. Unger](#)

Seminar Kondensierte Materie

Thema: Engine runterladen und los: kleine ML-Anwendungen

Datum: 17.06.19

Uhrzeit: 14:15

Ort: D5-153

Vortragender: [Johannes Brinkrolf](#)

Universität Bielefeld

Inhalt:

Ansprechpartner: [Jürgen Schnack](#)

Seminar Mathematische Physik

Thema: [Critical behaviour and characteristic polynomials of non-Hermitian random matrices](#)

Datum: 23.05.19

Uhrzeit: 16:15

Ort: D5-153

Vortragender: [Nicholas Simm](#)

University of Sussex

Inhalt: I will discuss some recent developments regarding the normal matrix model. In particular my interest will be in certain critical models where the limiting support of the eigenvalues can radically change its topology by slightly adjusting an external parameter. I will discuss how aspects of the model can be explicitly mapped to the study of expectations of characteristic polynomials of non-Hermitian random matrices (e.g. Ginibre or truncated unitary). Many of these averages are related to Painlevé transcendents, and by exploiting this, a precise and non-trivial asymptotic expansion of partition functions can be calculated in the critical models. This is joint work with Alfredo Deaño (University of Kent).

Ansprechpartner: [Gernot Akemann](#)

Seminar AG Zufallsmatrizen

Thema: [Non-Hermitian matrices: critical behaviour and asymptotics](#)

Datum: 19.06.19

Uhrzeit: 16:15

Ort: V3-201

Vortragender: [Alfredo Deano](#)

University of Kent

Inhalt: In this talk we present some recent work on the large N asymptotic behavior of the partition function for $N \times N$ non-Hermitian random matrices, in particular Ginibre ensemble with added algebraic singularities. This model is motivated by the study of normal random matrix ensembles with rotational symmetry in the complex plane. In suitable double scaling regimes, when these singularities are allowed to merge or collide with the boundary of the limit support of the equilibrium measure, we also investigate the appearance of Painlevé transcendents, in analogy with the case of Hermitian ensembles. This is joint work with Nick Simm (University of Sussex)

Ansprechpartner: [Gernot Akemann](#)