

# Aktuelle Veranstaltungen

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## Kolloquium

**Thema:** [Critical transitions in Earth system dynamics](#)

**Datum:** 24.01.22

**Uhrzeit:** 16:15

**Ort:** cyberspace

**Vortragender:** [Dr. Niklas Boers](#)

Technical University of Munich and Potsdam Institute for Climate Impact Research

**Inhalt:** Both theory and evidence from paleoclimate proxy records recording the evolution of the climate system in the long-term past suggest that some components of the Earth system can respond abruptly to gradual changes in forcing. These transitions can be described in terms of bifurcations in nonlinear dynamical systems, which also hints at means to anticipate them. After giving some basic elements of the underlying theory, we review some of the potentially multistable subsystems, focussing on paleoclimate and observational data. These include the polar ice sheets, the Atlantic Meridional Overturning Circulation, as well as tropical rainforests and monsoon systems. We discuss different ways to predict their future evolution under anthropogenic forcing.

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

## Kolloquium Mathematische Physik

**Thema:** 20220506-Volker Bach-TBC

**Datum:** 06.05.22

**Uhrzeit:** 16:15

**Ort:** ZOOM/Konferenzschaltung

**Vortragender:** [Volker Bach](#)

Technische Universität Braunschweig

**Inhalt:** TBC

**Ansprechpartner:** [M. Baake](#)

## Seminar Hochenergiephysik

**Thema:** [Quantum-to-Classical Transition of Adiabatic and Entropy Perturbations in the Presence of an Axion-like Particle](#)

**Datum:** 20.01.22

**Uhrzeit:** 14:15

**Ort:** D6-135

**Vortragender:** Jondalar Kuß

Universität Bielefeld

**Inhalt:** In my master's thesis at Göttingen University I studied the effect that an axion-like particle being present during inflation as a light scalar field could have on the primordial perturbations, using the formalism of squeezed states. The axionic field becomes highly squeezed during inflation and remains so after reheating. Initially, it merely produces isocurvature perturbations, curvature is only sourced when the Hubble parameter becomes comparable to the axion mass.

**Ansprechpartner:** [D. Bödeker](#)

## Seminar Kondensierte Materie

**Thema:** tba

**Datum:** 20.01.22

**Uhrzeit:** 14:15

**Ort:** Hybrid - Zoom/D5-153

**Vortragender:** Paul Angelike

Universität Bielefeld

**Inhalt:**

**Ansprechpartner:** [Peter Reimann](#)

## Seminar Mathematische Physik

**Thema:** [On Non-Hermitian Beta-Ensembles](#)

**Datum:** 14.10.21

**Uhrzeit:** 16:00

**Ort:** D5-153

**Vortragender:** [Patricia Päßler](#)

Universität Bielefeld

**Inhalt:**

Log-gases with inverse temperature  $\beta$  are systems with many applications in physics, for example in the theory of superconductors or the fractional quantum Hall effect. For some specific values of  $\beta$  a correspondence to random matrix theory (RMT) is well established. The advantage of this connection is the usage of the RMT methods in the study of those systems. The goal of this talk is the discussion of Log-gases in two dimensions, i.e. in the non-Hermitian case, for more general values of the inverse temperature. Therefore, we study in the first part a model of normal  $2 \times 2$  matrices with  $\beta$  in  $[0,2]$  and discuss whether we find a surmise for the nearest-neighbour spacing distribution of large matrices. In the second part of the talk we introduce the study of symmetry classes in non-Hermitian RMT. We conjecture that the classes of complex symmetric and complex quaternion matrices can be effectively described by Log-gases in two dimensions with non-integer inverse temperatures.

Ansprechpartner: [Gernot Akemann](#)

## Seminar Bielefeld-Melbourne Zufallsmatrizen

**Thema:** [The Wasserstein distance to the Circular Law](#)

**Datum:** 19.01.22

**Uhrzeit:** 09:00

**Ort:** ZOOM / Konferenzschaltung

**Vortragender:** [Jonas Jalowy](#)

Westfälische Wilhelms-Universität Münster

**Inhalt:** In this talk we investigate the Wasserstein distance between the empirical spectral distribution of non-Hermitian random matrices and the Circular Law. For general entry distributions, I present a nearly optimal rate of convergence in 1-Wasserstein distance of order  $n^{-1/2+\epsilon}$  and show that the optimal rate  $n^{-1/2}$  is attained by Ginibre matrices. This reveals that the expected transport cost of complex eigenvalues to the uniform measure on the unit disk decays faster compared to that of i.i.d. points, which is known to include a logarithmic factor. We shall also discuss the results from a point of view of random geometry, which will be accompanied by illustrative simulations.

Ansprechpartner: [Gernot Akemann](#)