

# Aktuelle Veranstaltungen

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## Kolloquium

**Thema:** tba

**Datum:** 16.04.18

**Uhrzeit:** 16:15

**Ort:** H6

**Vortragender:** [Prof. Hervé Rigneault](#)

Institut Fresnel, Marseille

**Inhalt:**

**Ansprechpartner:** [T. Huser](#)

## Kolloquium Mathematische Physik

**Thema:** [Mesoscopic eigenvalue correlations of random matrices](#)

**Datum:** 01.12.17

**Uhrzeit:** 16:00

**Ort:** V2-210/216

**Vortragender:** Antti Knowles

University of Geneva

**Inhalt:**

Ever since the pioneering works of Wigner, Gaudin, Dyson, and Mehta, the correlations of eigenvalues of large random matrices on short scales have been a central topic in random matrix theory. On the microscopic spectral scale, comparable with the typical eigenvalue spacing, these correlations are now well understood for Wigner matrices thanks to the recent solution of the Wigner-Gaudin-Dyson-Mehta universality conjecture. In this talk I focus on eigenvalue density-density correlations between eigenvalues whose separation is much larger than the microscopic spectral scale; here the correlations are much weaker than on the microscopic scale. I discuss to what extent the Wigner-Gaudin-Dyson-Mehta universality remains valid on such larger scales, for Wigner matrices and random band matrices.

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

## Seminar Hochenergiephysik

**Thema:** [Sign problem and diagrammatic representation of scalar vs. real QCD](#)

**Datum:** 01.03.18

**Uhrzeit:** 14:15

**Ort:** D6-135

**Vortragender:** [Falk Bruckmann](#)

Univ. Regensburg

**Inhalt:**

We discuss representations of lattice field theories in terms of diagrams of dual variables (occupation numbers). Our main motivation is the nonzero density sign problem which can be solved through this approach in various systems. As a start we will dualize two-dimensional sigma models (which are asymptotically free and generate a dynamical mass, as does QCD) and present some numerical results on the phase diagram. In the second part we will present a dualization of QCD with scalar quarks, where the sign problem is solved, too. Finally a comparison to real QCD will be made.

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

## Seminar Kondensierte Materie

[Brownian motion of an ellipsoidal particle in a tilted periodic](#)

**Thema:** [potential: long-term velocity and diffusion](#)

**Datum:** 22.02.18

**Uhrzeit:** 14:15

**Ort:** D5-153

**Vortragender:** [Ralf Eichhorn](#)

NORDITA, Stockholm

**Inhalt:**

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

## **Seminar Mathematische Physik**

**Thema:** [Eigenvector-related correlation functions and their connection with generalized chiral random matrix ensembles with a source](#)

**Datum:** 11.01.18

**Uhrzeit:** 16:00

**Ort:** D5-153

**Vortragender:** Jacek Grela

LPTMS Université Paris-Sud

We will introduce eigenvector-related correlation functions, discuss briefly their significance in dynamical Ginibre ensemble [1,2] and present asymptotic results in the large matrix size limit. Motivated by recent work [3] on joint eigenvector-eigenvalue correlation function valid for finite matrix size  $N$  in the complex and real Ginibre Ensembles, we study integrable structure of a certain generalized chiral Gaussian Unitary Ensemble with a source [4]. This model can be also interpreted as a deformation of the complex Ginibre Ensemble with an external source with additional determinant term. We present compact formulas for the characteristic polynomial, inverse characteristic polynomial and the kernel. In the case of a special source, we

**Inhalt:** calculate asymptotics in the joint "bulk-edge" regime of all aforementioned objects and show their Bessel-type behaviour. References: [1] "Dysonian dynamics of the Ginibre ensemble", Z. Burda, J. Grela, M. A. Nowak, W. Tarnowski, P. Warcho?, Phys. Rev. Lett. 113, 104102 (2014) [2] "Unveiling the significance of eigenvectors in diffusing non-hermitian matrices by identifying the underlying Burgers dynamics", Z. Burda, J. Grela, M. A. Nowak, W. Tarnowski, P. Warcho?, Nucl. Phys. B 897, 421 (2015) [3] "On statistics of bi-orthogonal eigenvectors in real and complex Ginibre ensembles: combining partial Schur decomposition with supersymmetry", Y. V. Fyodorov, arXiv:1710.04699 [4] "On characteristic polynomials for a generalized chiral random matrix ensemble with a source", Y. V. Fyodorov, J. Grela, E. Strahov, arXiv:1711.07061

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

## Seminar AG Zufallsmatrizen

**Thema:** [tba](#)

**Datum:** 27.03.18

**Uhrzeit:** 14:15

**Ort:** D5-153

**Vortragender:** Udaysinh Bhosale

Indian Institute of Science, Education and Research

**Inhalt:**

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