

Aktuelle Veranstaltungen

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

Thema: **Realistische thermodynamische Kreisprozesse**

Datum: 19.04.18

Uhrzeit: 15:46

Ort: D5-153

Vortragender: Christian Beckmann
Universität Bielefeld

Inhalt:

Ansprechpartner: [Jürgen Schnack](#)

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

Inhalt: 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 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: [Random matrix theory and its applications to entanglement studies](#)

Datum: 27.03.18

Uhrzeit: 14:15

Ort: D5-153

Vortragender: Udaysinh Bhosale

Indian Institute of Science, Education and Research

Inhalt: Wigner introduced random matrices to model the heavy nuclei, which is a very complex system with many unknown details. The typical quantum state of such a system can be modeled by a random pure state. In this talk I will present various results on bipartite and tripartite entanglement in these states. Various applications of random matrix theory for this study will be shown. Extreme value statistics of random matrices will be shown to be useful in finding fraction of entangled states at critical dimensions. Finally, I will explain the effects of the large deviations of the extreme Schmidt eigenvalues on the entanglement.

Ansprechpartner: [Gernot Akemann](#)