Upcoming Events

Colloquium

Topic: Vorstellung der Arbeitsgruppen

Date: 27.11.17

Time: 16:15

Place: H6

Guest: Arbeitsgruppen der Physik

Abstract:

Contact person: Fachschaft

Colloquium Mathematical Physics

Topic: Mesoscopic eigenvalue correlations of random matrices

Date: 01.12.17

Time: 16:00

Place: V2-210/216

Guest: Antti Knowles

University of Geneva
Abstract: 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.

Contact person: G. Akemann

Seminar High Energy Physics

Topic: QCD monopoles, Abelian Projections and Gauge Invariance.

Date: 28.11.17

Time: 14:15

Place: D6-135

Guest: Adriano Di Giacomo

Pisa

Abstract: Condensation of monopoles in Non Abelian Gauge Theories is shown to be a gauge-invariant property and Abelian projection independent. The order parameter is computed numerically for SU(2) and SU(3) theories: it is consistent with dual superconductivity of the confining vacuum.

Contact person: Ch. Schmidt

Seminar Condensed Matter

Topic: Lateral trapping of DNA inside a voltage gated nanopore

Date: 30.11.17
Time: 14:15

Place: D5-153

Guest: Thomas Toews

Bielefeld University

Abstract:

Contact person: Peter Reimann

Seminar Mathematical Physics

Topic: CFT and SLE in a doubly connected domain

Date: 09.11.17

Time: 16:00

Place: D5-153

Guest: Sungsoo Byun

Seoul National University

In this talk, I will present certain implementations of conformal field theory (CFT) in a doubly connected domain. The statistical fields in these implementations are generated by central charge modifications of the Gaussian free field with excursion reflected/Dirichlet boundary conditions. I will explain Ward's equation in terms of a stress energy tensor, Lie derivative operators and the modular parameter. Combining Ward's equation with the level 2 degeneracy equation for the boundary condition changing operator, I will outline the relation between CFT and Schramm-Loewner Evolution (SLE) theory. As applications, I will present a version of restriction property and Friedrich-Werner’s formula for annulus SLE and explain how to apply the method of screening to find explicit solutions of the partial differential equations for the annulus SLE partition functions introduced by Lawler and Zhan. This is based on joint work with Nam-Gyu Kang and Hee-Joon Tak.

Contact person: Gernot Akemann
Seminar AG Zufallsmatrizen

**Topic:** Random matrices with slow correlation decay

**Date:** 29.11.17

**Time:** 14:15

**Place:** V3-201

**Guest:** Torben Krueger

University of Bonn

The resolvent of a large dimensional self-adjoint random matrix approximately satisfies the matrix Dyson equation (MDE) up to a random error. We show that for random matrices with arbitrary expectation and slow decay of correlation among its entries this error matrix converges to zero both in an isotropic and averaged sense with optimal rates of convergence as the dimension tends to infinity. This result requires a delicate cancellation (self-energy renormalization) which is seen through a diagrammatic cumulant expansion that automatically exploits the cancellation to all orders. Furthermore, we provide a comprehensive isotropic stability analysis of the MDE down to the length scale of the eigenvalue spacing. This analysis is then used to show convergence of the resolvent to the non-random solution of the MDE and to prove that the local eigenvalue statistics are universal, i.e. they do not depend on the distribution of the entries of the random matrix under consideration (Wigner-Dyson-Mehta spectral universality). [Joint work with Oskari Ajanki & Laszlo Erdös & Dominik Schröder]

**Contact person:** Gernot Akemann