Upcoming Events

Colloquium

Topic: tba

Date: 14.10.19

Time: 16:15

Place: H6

Guest: Prof. Dr. Christine Silberhorn

Universität Paderborn

Abstract:

Contact person: W. Pfeiffer

Colloquium Mathematical Physics

Topic: Counting bound states: From Weyl to Maximal Fourier Multipliers

Date: 05.07.19

Time: 16:15

Place: V2-200

Guest: Dirk Hundertmark

KIT
Abstract:
Deriving precise estimates for bound states has a long history. It ranges from Rayleigh's theory of sound and Weyl's asymptotic to more detailed questions concerning the eigenvalue distribution of Schrödinger operators. We will give a personally biased sketch of some of the history and discuss some new results, including the somewhat surprising fact how tools from harmonic analysis - so-called maximal Fourier multiplier bounds - can help in counting bound states.

Contact person: B. Gentz

Seminar High Energy Physics

Topic: The Large-scale Structure of our Universe with Radio galaxies

Date: 20.09.19

Time: 14:15

Place: D6-135

Guest: Prabharkar Tiwari

NAOC Beijing

The "Cosmological Principle" assumes homogeneity and isotropy at large distance scales. This is a fundamental assumption in our standard cosmological framework and therefore must be tested explicitly by observations. In this talk, I will review some great (bizarre, famous, significant!) observations of large scale isotropy/anisotropy achieved by employing radio galaxy surveys. In particular I will present the radio galaxy number count dipole and the latest dipole?quadrupole?octopole alignment results from NVSS+SUMSS catalogs. I will discuss a few more observations of large scale isotropy/anisotropy and the existing theoretical proposals to explain these. At present there are several major radio galaxy observations available e.g. LOFAR surveys, TGSS, GLEAM etc. and we have a lot to explore from these observations, later on we are going to have Square Kilometre Array (SKA) observations. With SKA all radio physics is going to benefit immensely, will discuss how much improvement we are expecting to have on isotropy/anisotropy observations with upcoming SKA observations.

Contact person: D. Schwarz

Seminar Condensed Matter
Next-neighbors particle-particle interaction of fermions in quasi-one-dimensional flat-band lattices

Date: 22.07.19
Time: 14:15
Place: D5-153
Guest: Simon Tilleke
Bielefeld University

Abstract:

Contact person: Thomas Dahm

Seminar Mathematical Physics

Critical behaviour and characteristic polynomials of non-Hermitian random matrices

Date: 23.05.19
Time: 16:15
Place: D5-153
Guest: Nicholas Simm
University of Sussex

Abstract:
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 transcendentals, 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).

Contact person: Gernot Akemann

Seminar AG Zufallsmatrizen

**Eigenvalue Spacings of Random Matrices compared to Locations of Buzzard Nests**

**Date:** 04.07.19

**Time:** 14:15

**Place:** D5-153

**Guest:** Rebecca Werdehausen

Bielefeld University

The territorial behavior of buzzards suggests a repulsion between the nests that may match with the repulsion between complex eigenvalues of non-hermitian random matrices. The Ginibre ensemble and the nearest neighbor spacings of the two-dimensional eigenvalues will be introduced and compared to the Poissonian Process in the plane. Then we will calculate the spacings between buzzard nests and the Kolmogorov distance to both theoretical curves. For this aim, the unfolding of the data set is indispensable, so that areas of high human settlement do not influence the spacing statistics. Two different unfolding methods in 2D will be tested and applied.

Contact person: Gernot Akemann