Aktuelle Veranstaltungen

Kolloquium

Thema: tba
Datum: 20.01.20
Uhrzeit: 16:15
Ort: H6
Vortragender: Prof. Dr. Heino Falcke
Radboud Universität Nijmegen
Inhalt:

Ansprechpartner: J. Verbiest

Kolloquium Mathematische Physik

Thema: Numerics for resonances of Schottky surfaces
Datum: 10.01.20
Uhrzeit: 16:15
Ort: V3-201
Vortragender: Anke Pohl
Universität Bremen
Resonances of Riemannian manifolds are of great importance in many areas of mathematics and physics. Even though many fascinating results about these spectral entities have already been found, an enormous amount of their properties, also some very elementary ones, is still undiscovered. A few years ago, by means of numerical experiments, Borthwick noticed for some classes of Schottky surfaces (certain hyperbolic surfaces of infinite area) that their sets of resonances exhibit unexpected and nice patterns, which are not yet fully understood. After a survey of some parts of this field, we will discuss an alternative numerical method, combining tools from dynamics, zeta functions, transfer operators and thermodynamic formalism, functional analysis and approximation theory. This is joint work with Oscar Bandtlow, Torben Schick and Alexander Weiße.

Ansprechpartner: M. Baake

Seminar Hochenergiephysik

Thema: Transport properties of the hot and dense QGP

Datum: 21.01.20

Uhrzeit: 14:15

Ort: D6-135

Vortragender: Olga Soloveva

FIAS Frankfurt

Transport properties of the quark-gluon plasma in a hot and dense QCD medium have been studied. We have calculated transport coefficients for massive interacting quasi-particles with non-zero widths described by the Dynamical Quasi-Particle Model (DQPM). The DQPM enable to calculate the quark and gluon collisional interaction rates using the cross-sections. Transport coefficients have been estimated using the collisional interaction rates as an inverse relaxation time on the base of the relaxation time approximation (RTA). We compute the ratio of the shear and bulk viscosities to the entropy density, i.e. $\frac{\eta}{s}$ and $\frac{\zeta}{s}$, the electric conductivity $\frac{\sigma_0}{T}$ as well as the baryon diffusion coefficient $\kappa_B$ and compare to related approaches from the literature (lattice QCD, NJL, ADS/CFT). We find that the ratios $\frac{\eta}{s}$ and $\frac{\zeta}{s}$ as well as $\frac{\sigma_0}{T}$ are in accord with the results from lattice QCD at $\mu_B=0$ and only weakly depend on the ratio $\frac{T}{T_c(\mu_B)}$ where $T_c(\mu_B)$ denotes the critical temperature at finite baryon chemical potential.
Seminar Kondensierte Materie

**Thema:** Multiple-scale stochastic processes: decimation, averaging and beyond

**Datum:** 30.01.20

**Uhrzeit:** 14:15

**Ort:** D5-153

**Vortragender:** Stefano Bo

MPI for the Physics of Complex Systems

Many systems of interest involve processes taking place on widely separated time scales. For an efficient modeling one usually focuses on the slower degrees of freedom and it is of great importance to accurately eliminate the fast variables in a controlled fashion, carefully accounting for their net effect on the slower dynamics. Multiple-scale techniques provide a systematic approach to this task. I will present such procedures and discuss their application to some stochastic systems of physical, biological and chemical relevance. I will then consider functionals of the stochastic trajectories such as residence times, counting statistics, fluxes, entropy production, etc.. For such functionals, the elimination of the fast degrees of freedom can present additional difficulties and naive procedures can lead to blatantly inconsistent results. These difficulties can be overcome by systematic multiple-scales approaches, which are less covered in the literature but can be seen as natural extensions of the ones employed for the trajectories.

Ansprechpartner: Peter Reimann

Seminar Mathematische Physik

**Thema:** Critical behaviour and characteristic polynomials of non-Hermitian random matrices

**Datum:** 23.05.19

**Uhrzeit:** 16:15
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 transcendents, 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).

Ansprechpartner: Gernot Akemann

Seminar AG Zufallsmatrizen

**Dimensional reduction for elliptic SPDE's: integrable structures and large deviations**

Datum: 18.12.19

Uhrzeit: 16:15

Ort: V3-201

Vortragender: Oleg Zaboronski

University of Warwick

I will review the phenomenon of dimensional reduction for elliptic stochastic PDE's in two and three dimensions due to hidden supersymmetry discovered by Parisi and Soursas. I will use dimensional reduction to establish a link between matrix-valued elliptic SPDE's and determinantal point processes. I will show that the large deviations principle can be established for a class of equations without any reference to supersymmetry. The talk is based on joint work with Roger Tribe and David Elworthy.

Ansprechpartner: Gernot Akemann