Aktuelle Veranstaltungen

Kolloquium

**Thema:** Topological and morphological analysis of random fields with applications to compressible turbulence

**Datum:** 28.05.18

**Uhrzeit:** 16:15

**Ort:** H6

**Vortragender:** Prof. Anvar Shukorov

Newcastle University

The theory of random functions and techniques of data analysis based on it mostly rely on the Gaussian statistical properties of the underlying random fields. This limitation is becoming less and less acceptable as the resolution, sensitivity and physical complexity of experimental and numerical data increase. Observations and simulations of compressible random flows, especially in astrophysical contexts, provide a good example of this difficulty. This work is motivated by the need to compare with observations the results of comprehensive simulations of turbulence in the interstellar medium. The quantitative methods used at present are largely limited to probability densities and Fourier spectra of random fields. Meanwhile, observations suggest widespread filamentary structures of the interstellar gas to which the available methods are insensitive. We discuss novel methods of data analysis that are applicable to intermittent, strongly non-Gaussian random fields and are based on recent developments in computational topology and morphology or random fields. Particular aspects that will be discussed include the recovery of a three-dimensional structure of a random field from its two-dimensional cross-section and the effects of magnetic field on interstellar turbulence.

**Ansprechpartner:** D. Schwarz

Kolloquium Mathematische Physik
The numerical range of positive operators

Datum: 25.05.18
Uhrzeit: 16:15
Ort: V3-204
Vortragender: Agnes Radl

Inhalt: The numerical range of a linear operator $A$ on a Hilbert space $H$ is defined as $W(A) = \{ : x \in H, \|x\|=1 \}$. It is well-known that the closure of the numerical range contains the spectrum. Hence, it can be used to localise the spectrum. In this talk, we will first study symmetry properties of the numerical range of positive operators in Hilbert lattices.
Then we will investigate various generalisations of the numerical range. It turns out that the numerical range exhibits a certain rotational symmetry which is similar to the rotational symmetry of the spectrum of a positive operator.

Ansprechpartner: M. Baake

Seminar Hochenergiephysik

The QCD crossover up to $O(\mu^6_B)$ from Lattice QCD

Datum: 29.05.18
Uhrzeit: 14:00
Ort: D6-135
Vortragender: Patrick Steinbrecher

Inhalt:

Ansprechpartner: F. Karsch
Seminar Kondensierte Materie

Thema: tba

Datum: 24.05.18

Uhrzeit: 14:15

Ort: D5-153

Vortragender: Ben Niklas Balz

Universität Bielefeld

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
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: