Aktuelle Veranstaltungen

Kolloquium

Abschiedskolloquium für Prof. Dr. Edwin Laermann: Future perspectives of supercomputing - fighting the limits of scalability

Thema:

Datum: 28.01.19

Uhrzeit: 16:00

Ort: H6

Vortragender: Prof. Dr. Dr. Thomas Lippert

Forschungszentrum Jülich

Inhalt:

Ansprechpartner: F. Karsch

Kolloquium Mathematische Physik

On symmetry-protected topological states: from free fermions to the Haldane phase

Thema:

Datum: 01.02.19

Uhrzeit: 16:15

Ort: U2-228

Vortragender: Martin Zirnbauer
The Nobel-Prize winning Haldane phase of spin-1 antiferromagnetic spin chains is a paradigm for symmetry-protected topological phases. When local charge fluctuations are allowed, there has been a debate: protection by what? My answer is that there exists an adiabatic path to a free-fermion topological phase of class AIII, protected by a particle-hole symmetry. To set the stage, I will review Dyson’s Threelfold Way and recall the Tenfold Way of disordered fermions.

Ansprechpartner: G. Akemann

Seminar Hochenergiephysik

Thema: Supersymmetric Yang-Mills Theory on the Lattice

Datum: 29.01.19

Uhrzeit: 14:15

Ort: D6-135

Vortragender: Philipp Scior

Bielefeld

Supersymmetry (SUSY) plays an important role in the theoretical description of physics beyond the Standard Model. To this day, most of what is known about supersymmetric extensions of the Standard Model comes from perturbation theory. However, various important characteristics, like the existence of mass-degenerate supermultiplets of particles at low energies or a hypothetical SUSY breaking mechanism, are inherently non-perturbative effects. Lattice simulations are a powerful tool to study non-perturbative aspects of quantum field theories. Unfortunately, the lattice discretization breaks SUSY explicitly. However, in N=1 supersymmetric Yang-Mills Theory one is able to recover SUSY in the continuum limit by fine-tuning one relevant parameter of the theory. I show our latest results for lattice simulations of N=1 supersymmetric Yang-Mills Theory. We find a formation of mass-degenerate supermultiplets, consisting of a scalar, a pseudo-scalar and a fermionic bound state, in the continuum limit. Moreover, we are able to measure the glueball-meson mixing in physical states.

Ansprechpartner: Ch. Schmidt
It is well known that the (complex) empirical spectral distribution of a non-Hermitian random matrix with i.i.d. entries will converge to the uniform distribution on the complex disc as the size of the matrix tends to infinity. In this talk, we investigate the rate of convergence to the Circular Law in terms of a uniform, 2-dimensional Kolmogorov-like distance. The optimal rate of convergence is determined by the Ginibre ensemble and is given by $n^{-1/2}$. I will present a
Inhalt: smoothing inequality for complex measures that quantitatively relates the Kolmogorov-like distance to the concentration of logarithmic potentials. Combining it with results from local circular laws, it is applied to prove nearly optimal rate of convergence to the circular law with overwhelming probability. Furthermore I will relate the result to other distances, present an analogue for the empirical root measure of Weyl random polynomials with independent coefficients and discuss a possible generalization for products of independent matrices. The talk is based on joint work with Friedrich Götze.

Ansprechpartner: Gernot Akemann

Seminar AG Zufallsmatrizen

Thema: tba

Datum: 30.01.19

Uhrzeit: 16:00

Ort: V3-201

Vortragender: Mihail Poplavskyi

King's College London

Inhalt:

Ansprechpartner: Gernot Akemann