

Aktuelle Veranstaltungen

Kolloquium

Thema: [Controlling nanomaterials and their interfaces for biology applications](#)

Datum: 17.12.18

Uhrzeit: 16:15

Ort: H6

Vortragender: [Prof. Jean-Francois Berret](#)

Laboratoire Matière et Systèmes Complexes, UMR 7057 CNRS Université Denis Diderot Paris-VII

Inhalt: Engineered nanomaterials are essential components in the development of nanotechnologies. In this lecture, I will discuss the use of nanomaterials, including nanoparticles for applications in nanomedicine and biophysics. I will provide examples of particles used as diagnostic and therapeutic agents for the treatment of major diseases. I will also talk about inhaled pollution particles emitted by industrial activities and about their impact on human health. On the physical chemistry side, emphasis will be put on strategies developed in my group to control particle interfaces. It is now recognized that these interfaces determine for a significant part their fate in biological environments. Finally, I will show how in some conditions particles can be translated into nano- and microdevices and manipulated to allow the measurements of physical quantities of biological materials (such as viscosity and elasticity).

Ansprechpartner: [W. Pfeiffer](#)

Kolloquium Mathematische Physik

Thema: [tba](#)

Datum: 01.02.19

Uhrzeit: 16:15

Ort: U2-228

Vortragender: [Martin Zirnbauer](#)

University of Cologne

Inhalt:

Ansprechpartner: [G. Akemann](#)

Seminar Hochenergiephysik

Thema: [Nuclear charge-exchange modes in Relativistic Nuclear Field Theory](#)

Datum: 13.12.18

Uhrzeit: 14:15

Ort: D6-135

Vortragender: [Caroline Robin](#)

Univ. of Washington, Seattle

Inhalt: Atomic nuclei are complex many-body systems where single-particle and collective degrees of freedom are deeply intertwined. The nuclear structure method which I will discuss is based on the relativistic meson-nucleon Lagrangian of quantum hadrodynamics and uses nuclear field theory to build inter-nucleon correlations emerging from the coupling between nucleons and emergent collective vibrations. Recently we have extended this formalism to the description of charge-exchange modes which have various applications in nuclear structure, particle physics and astrophysics. The particle-vibration coupling generates a time-dependent proton-neutron interaction, in addition to the static pion and rho-meson exchange, which induces fragmentation and spreading of the transition strength. Such dynamical effects are essential for an accurate description of giant resonances and low-energy modes, and have a great impact on the calculation of weak-interaction rates and on the quenching of the overall strength. I will present some applications to Gamow-Teller transitions and beta decay in mid-mass and heavy nuclei.

Ansprechpartner: [Ch. Schmidt](#)

Seminar Kondensierte Materie

Thema: [Equilibration of expectation values for statically and dynamically generated initial conditions](#)

Datum: 14.12.18

Uhrzeit: 14:15

Ort: D2-240

Vortragender: Christian Bartsch

Universität Osnabrück

Inhalt: We investigate dynamical equilibration of expectation values in closed quantum systems for realistic non-equilibrium initial states. For statically generated initial states we find that the long time expectation values depend on the initial expectation values if eigenstate thermalization is violated. An analytical expression for the deviation from the expected ensemble value is derived for small displacements from equilibrium based on linear response theory. Analogous derivations show that this deviation vanishes for dynamically generated initial states, at least within the linear response regime. Additional numerics for magnetization and energy equilibration in an asymmetric anisotropic spin-1/2-ladder illustrate the behavior beyond linear response for both cases.

Ansprechpartner: [Peter Reimann](#)

Seminar Mathematische Physik

Thema: [tba](#)

Datum: 20.12.18

Uhrzeit: 15:00

Ort: D5-153

Vortragender: Yanik-Pascal Foerster

Bielefeld University

Inhalt:

Ansprechpartner: [Gernot Akemann](#)

Seminar AG Zufallsmatrizen

Thema: [The level spacing distribution at the hard edge](#)

Datum: 28.11.18

Uhrzeit: 16:15

Ort: V3-201

Vortragender: Valentin Gorski

Bielefeld University

Inhalt: The level spacing distribution in the bulk of a spectrum is approximately given by the Wigner surmise. Yet, at the hard and the soft edge one can expect strong deviations from these laws. Using the orthogonal polynomial method we derive the spacing distribution of the smallest two singular values of the chiral Gaussian unitary ensemble (chGUE) at finite matrix dimension with additional characteristic polynomials in the weight. The number of these polynomials represents the number of flavors (types of quarks) in the physical system. This ensemble approximates the Euclidean Dirac operator in Quantum Chromodynamics (QCD). In my talk, I will report on the behavior of the level spacing distribution in this particular setting.

Ansprechpartner: [Gernot Akemann](#)