

Aktuelle Veranstaltungen

Kolloquium

Thema: [Hot quarks and gluons on the lattice](#)

Datum: 29.11.21

Uhrzeit: 16:15

Ort: H4

Vortragender: [Prof. Gergely Endrödi](#)

Universität Bielefeld

Inhalt: What did our Universe look like shortly after the Big Bang? Why are neutron stars so massive and compact? What happens when two heavy ions, accelerated to almost the speed of light, collide with each other? All the above questions are answered by the theory of the strong interactions, Quantum Chromodynamics. The strong force binds quarks and gluons together into protons and neutrons and is thereby responsible for almost all of the mass of the visible Universe around us. The equations of Quantum Chromodynamics cannot be solved analytically - but instead they can be discretized on a space-time lattice and simulated numerically. In this talk I will provide a brief introduction to these lattice simulations and discuss some of the extraordinary features of the theory. In particular, I will focus on what we can learn from the behavior of quarks and gluons in hot, dense and strongly magnetized environments for the above mentioned systems: for example the early Universe and heavy-ion collisions.

Ansprechpartner: [Dekan](#)

Kolloquium Mathematische Physik

Thema: 20220506-Volker Bach-TBC

Datum: 06.05.22

Uhrzeit: 16:15

Ort: ZOOM/Konferenzschaltung

Vortragender: [Volker Bach](#)

Technische Universität Braunschweig

Inhalt: TBC

Ansprechpartner: [M. Baake](#)

Seminar Hochenergiephysik

Thema: [Early-Time Thermalization of Cosmic Components? A Hint for Solving Cosmic Tensions](#)

Datum: 30.11.21

Uhrzeit: 14:15

Ort: D6-135

Vortragender: [Hermano Velten](#)

Universidade Federal de Ouro Preto/BR

Inhalt:

Ansprechpartner: [D. Schwarz](#)

Seminar Kondensierte Materie

Thema: tba

Datum: 14.01.22

Uhrzeit: 14:15

Ort: D5-153

Vortragender: [Roman Rausch](#)

TU Braunschweig

Inhalt:

Ansprechpartner: [Jürgen Schnack](#)

Seminar Mathematische Physik

Thema: [On Non-Hermitian Beta-Ensembles](#)

Datum: 14.10.21

Uhrzeit: 16:00

Ort: D5-153

Vortragender: [Patricia Päßler](#)

Universität Bielefeld

Inhalt:

Log-gases with inverse temperature β are systems with many applications in physics, for example in the theory of superconductors or the fractional quantum Hall effect. For some specific values of β a correspondence to random matrix theory (RMT) is well established. The advantage of this connection is the usage of the RMT methods in the study of those systems. The goal of this talk is the discussion of Log-gases in two dimensions, i.e. in the non-Hermitian case, for more general values of the inverse temperature. Therefore, we study in the first part a model of normal 2×2 matrices with β in $[0,2]$ and discuss whether we find a surmise for the nearest-neighbour spacing distribution of large matrices. In the second part of the talk we introduce the study of symmetry classes in non-Hermitian RMT. We conjecture that the classes of complex symmetric and complex quaternion matrices can be effectively described by Log-gases in two dimensions with non-integer inverse temperatures.

Ansprechpartner: [Gernot Akemann](#)

Seminar AG Zufallsmatrizen

Thema: [Gibbs ensemble for Integrable Systems, a case study: the discrete nonlinear Schrödinger equation \(Part II\)](#)

Datum: 30.11.21

Uhrzeit: 09:00

Ort: ZOOM / Konferenzschaltung

Vortragender: [Tamara Grava](#)

Bristol University

Inhalt: When the initial data of a discrete integrable system is sampled according to a probability measure, the Lax matrix of the system becomes a random matrix. The goal is to study the spectrum of random Lax matrices of integrable systems. In this setting we consider the discrete defocusing nonlinear Schrödinger equation in its integrable version, that is called Ablowitz Ladik lattice. When the initial data is sampled from the Gibbs ensemble the Lax matrix of the Ablowitz Ladik lattice turns into a random matrix that is related to the circular beta-ensemble at high temperature. We obtain the density of states of the random Lax matrix, when the size of the matrix goes to infinity, by establishing a mapping to the one-dimensional log-gas. The density of states is obtained via a particular solution of the double confluent Heun equation. Joint work with Guido Mazzuca.

Ansprechpartner: [Anas Rahman](#)