Aktuelle Veranstaltungen

Kolloquium

Thema: **Vorstellung der Arbeitsgruppen**

Datum: 21.10.19

Uhrzeit: 16:15

Ort: H6

Vortragender: Arbeitsgruppen der Physik

Inhalt:

Ansprechpartner: Fachschaft

Kolloquium Mathematische Physik

Thema: **Relativistic hydrodynamics, heavy-ion collisions, dynamical black holes and resurgent series**

Datum: 18.10.19

Uhrzeit: 16:15

Ort: V3-201

Vortragender: Michal P. Heller

Max-Planck-Institute for Gravitational Physics, Potsdam

The past 12 years has constituted the golden age for theoretical studies of relatativistic hydrodynamics. The experimental motivation for these developments came from ultra-relativistic heavy-ion collision at RHIC and LHC accelerators in which the paradigm of strongly-interacting medium modelled hydrodynamically became the working horse for explaining the data. These experimental and phenomenological developments have come hand-in-hand with theoretical progress in understanding relativistic hydrodynamics as an effective description embedded in quantum field theory. In my colloquium I will review the line of thought based on AdS/CFT (holography), an approach to study strongly-coupled quantum field theories using gravitational techniques, focusing on understanding the limits of applicability of relativistic hydrodynamics in far-from-equilibrium quantum field theory. A beautiful spin-off of this analysis is understanding hydrodynamic gradient expansion as a part of a trans-series, which encodes, through resurgence, information about genuinely non-equilibrium excitations of a collective state of matter. Based on a series of works reviewed in arXiv:1610.02023 and arXiv:1707.02282, as well as some later / ongoing work.

Ansprechpartner: S. Schlichting

Seminar Hochenergiephysik

Thema:	**Thermal modification of heavy mesons below Tc from an effective hadronic theory**
Datum:	17.10.19
Uhrzeit:	14:15
Ort:	D6-135
Vortragender:	Gloria Montana
	University of Barcelona
Inhalt:	We study the modification of heavy mesons in a hot pionic medium using a non-perturbative unitary approach based on an effective hadronic theory [1]. The interaction between the heavy mesons and pseudoscalar Goldstone bosons is described by a chiral Lagrangian at next-to-leading order in the chiral expansion and leading order in the heavy-quark mass expansion so as to preserve heavy-quark spin symmetry. The meson- meson scattering problem in coupled channels with finite-temperature corrections is solved in a self-consistent manner. From the self-consistent unitarized scattering amplitudes at finite tem- perature, we calculate the self-energies and the spectral functions of the ground-state charmed mesons. We observe that the D and D_s

mesons acquire a substantial width and their masses drop significantly with in- creasing temperatures. Similar thermal effects are found for the vectors D* and D*_s. This implies a modification at T > 0 of the excited mesonic states, generated dynamically in our heavy-light molecular model, as the D_0(2300) and D_s0(2317). [1] G. Montana, A. Ramos and L. Tolos, arXiv:1910.01384 [hep-ph] (Submission to SciPost Physics Proceedings).

Ansprechpartner: O. Kaczmarek

Seminar Kondensierte Materie

Thema:	**tba**
Datum:	31.10.19
Uhrzeit:	14:15
Ort:	D5-153
Vortragender:	Christian Eidecker
	Bielefeld University
Inhalt:	

Ansprechpartner: Peter Reimann

Seminar Mathematische Physik

Thema:	**Critical behaviour and characteristic polynomials of non-Hermitian random matrices**
Datum:	23.05.19
Uhrzeit:	16:15
Ort:	D5-153

Vortragender:	Nicholas Simm
	University of Sussex
Inhalt:	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

Thema:	**Spectral radius of random matrices with independent entries**
Datum:	23.10.19
Uhrzeit:	16:15
Ort:	V3-201
Vortragender:	Johannes Alt
	University of Geneva
Inhalt:	We consider random n x n matrices X with independent and centered entries and a general variance profile. We show that the spectral radius of X converges with very high probability to the square root of the spectral radius of the variance matrix of X when n tends to infinity. We also establish the optimal rate of convergence, that is a new result even for general i.i.d. matrices beyond the explicitly solvable Gaussian cases. The main ingredient is the proof of the local inhomogeneous circular law [arXiv:1612.07776] at the spectral edge. This is joint work with L\'{a}szl\'{o} Erd\"os and Torben Kr\"uger.
Ansprechpartner:	Gernot Akemann