Aktuelle Veranstaltungen

Kolloquium

Thema: **tba**

Datum: 01.02.21

Uhrzeit: 16:15

Ort: cyberspace

Vortragender: JProf. Francesca Cuteri

Goethe-Universität Frankfurt

Inhalt:

Ansprechpartner: F. Karsch/TR211

Kolloquium Mathematische Physik

Thema: **The problem of latency in estimating the Covid-19 replication number**

Datum: 08.05.20

Uhrzeit: 16:15

Ort: ZOOM/Konferenzschaltung

Vortragender: Lorenzo Sadun

University of Texas at Austin

Inhalt: Figuring out how to restart the world's economy without a resurgence of disease depends on understanding how contagious Covid-19 really is. However, estimates of the basic replication number R_0 vary greatly, with well-respected groups publishing estimates whose 95% confidence intervals don't even overlap. In this talk I'll go over the basic SIR and SEIR models of disease spread and present several different ways to treat the latency period between being exposed and becoming infectious. Simple SEIR models are unstable; working with a fixed set of data, small changes to the model can result in large changes to the estimated value of R_0. More realistic models are more complicated and are even less stable. The upshot is that we know much less about R_0 than is generally believed, and the error bars on the high side are particularly large. Containing the outbreak for an extended period may be a lot harder than our leaders think.

Ansprechpartner: Gähler, Dr. Franz

Seminar Hochenergiephysik

Thema: **Inconsistency of an inflationary sector coupled only (minimally) to gravity**

Datum: 17.09.20

Uhrzeit: 14:15

Ort: cyberspace

Vortragender: Daniel G. Figueroa

IFIC Valencia

Inhalt: The inflationary sector might very well have no direct couplings to other species, apart from inevitable gravitational interactions. In the context of General Relativity, a thermal universe can still emerge after inflation if i) a radiation sector is excited towards the end of inflation, and ii) the equation of state after inflation becomes sufficiently stiff $w > 1/3$. In such circumstances, the inflationary background of gravitational waves (GWs) is significantly enhanced, making this signal (potentially) observable by GW detectors. I will discuss first how LIGO and LISA could measure this signal, probing in this way the expansion rate of the early Universe. Secondly, I will show that the very same enhancement of the GW signal leads however to an inconsistency of the scenario, violating standard bounds on stochastic backgrounds of GWs. Finally, I will show that the very existence of the Standard Model Higgs can actually save the day, by simply requiring the Higgs to be non-minimally coupled to gravity.

Ansprechpartner: D. Bödeker

Seminar Kondensierte Materie

Thema: **Evaluation der Genauigkeit des Tschebyscheff-Algorithmus zur Bestimmung thermodynamischer Funktionen am Beispiel einer Heisenberg-Spin-Leiter**

Datum: 11.09.20

Uhrzeit: 14:00

Ort: ZOOM / Konferenzschaltung

Vortragender: Henrik Schlüter

Universität Bielefeld

Inhalt: Es wird eine Einführung in die numerische Berechnung thermodynamischer Funktionen mithilfe des Tschebyscheff-Algorithmus gegeben. Anschließend findet eine Bewertung der Ergebnisse am Beispiel einer Heisenberg-Spin-Leiter in Abhängigkeit der Tschebyscheff-Parameter statt.

Ansprechpartner: Jürgen Schnack

Seminar Mathematische Physik

Thema: **Statistics of Extremes in Eigenvalue-counting Staircases**

Datum: 04.06.20

Uhrzeit: 16:00

Ort: ZOOM / Konferenzschaltung

Vortragender: Yan Fyodorov

King's College London

Inhalt: We consider the counting function (“spectral staircase”) for eigenvalues of a random unitary matrix, drawn from the corresponding beta-ensemble. Our goal is to characterize the statistics of maximum deviation of this staircase from its mean slope in a fixed interval, when size of the matrix N >>1. We will show that one-sided extremes can be addressed by exploiting a mapping onto the statistical mechanics of log-correlated random processes and using an extended Fisher-Hartwig conjecture. The resulting statistics exhibits combined features of counting statistics of Fermions with Sutherland-type interaction and extremal statistics of the fractional Brownian motion with Hurst index H = 0. Some of the features are expected to be universal. The talk is based on the paper Fyodorov-Le Doussal arXiv:2001.04135.

Ansprechpartner: Gernot Akemann

Seminar Bielefeld-Melbourne Zufallsmatrizen

Thema: **Product matrix processes via symmetric functions**

Datum: 23.09.20

Uhrzeit: 09:00

Ort: ZOOM / Konferenzschaltung

Vortragender: Evgeny Strahov

The Hebrew University of Jerusalem

Inhalt: I will explain how the theory of symmetric functions can be applied to product matrix processes with symplectic and orthogonal invariance. These product matrix processes can be understood as scaling limits of Macdonald processes introduced by Borodin and Corwin. The relation with Macdonald processes enables to generalize the recent Kieburg-Kuijlaars-Stivigny formula for products of truncated unitary matrices to symplectic and orthogonal symmetry classes, and to obtain the joint law of squared singular values for products of truncations of Haar distributed symplectic and orthogonal matrices. Based on joint work with Andrew Ahn.

Ansprechpartner: Gernot Akemann