

# Aktuelle Veranstaltungen

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## 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:** [Quantum computing quantum field theory problems](#)

**Datum:** 15.12.20

**Uhrzeit:** 14:15

**Ort:** cyberspace

**Vortragender:** [Niklas Mueller](#)

BNL

**Inhalt:**

I will present an overview over the exciting field of quantum computation from a high energy / nuclear theory perspective (No hardware, sorry!). After a brief but pedagogical introduction into the basic concepts, and into some of the interesting physics problems, I will try to explain what “quantum computing” a (lattice) field theory problem actually requires one to do: from digitizing the Hilbert space of ones favorite theory to coming up with an algorithm including preparing states and extracting information by measurement. As an example, I will mostly focus on quantum computation of a dynamical problem (scattering) in scalar  $\phi^4$  theory, and will be contrasting the current state-of-the-art approach by Jordan, Lee and Preskill with one we are currently developing. I might talk about quantum computation/simulation of gauge theories, if time permits.

**Ansprechpartner:** [S. Schlichting](#)

## Seminar Kondensierte Materie

### [Evaluation der Genauigkeit des Tschebyscheff-Algorithmus zur Bestimmung thermodynamischer Funktionen am Beispiel einer Heisenberg-Spin-Leiter](#)

**Thema:**

**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

We consider the counting function (“spectral staircase”) for eigenvalues of a random

**Inhalt:** 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  $N \gg 1$ . 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:** [Limit Theorems for Frozen Calogero-Moser-Sutherland Particle Systems](#)

**Datum:** 28.10.20

**Uhrzeit:** 09:00

**Ort:** ZOOM / Konferenzschaltung

**Vortragender:** [Michael Voit](#)

Technische Universität Dortmund

**Inhalt:** Interacting particle systems of Calogero-Moser-Sutherland type on  $\mathbb{R}$  or intervals are described by some root system and coupling constants. From a probabilistic point of view they are multivariate Bessel processes; moreover they are closely related with dynamic random matrix models. In this talk we discuss some limit results when the coupling constants and/or the number of particles tend to infinity. It turns out that for the limits the behaviour of associated deterministic dynamical systems and the zeroes of classical orthogonal polynomials play a major role.

**Ansprechpartner:** [Thorsten Neuschel](#)