

Aktuelle Veranstaltungen

Kolloquium

Thema: [Der Dual Fluid Reaktor - neue Reaktortechnik zum Lösen unserer Energieprobleme](#)

Datum: 31.01.23

Uhrzeit: 14:15

Ort: H6

Vortragender: [Nico Bernt](#)

Dual Fluid Energy Inc., Vancouver, Canada

Inhalt: Als Einstieg begründe ich kurz die volkswirtschaftliche Daseinsberechtigung der Kernenergie auf Basis der ingenieurwissenschaftlichen Parameter (Energiedichte, EROI, Verfügbarkeit). Anschließend gebe ich einen kurzen Abriss zur bestehenden Kernspaltungsreaktortechnik und betrachte die Energieaufwendungen im Lebenszyklus aktueller Leichtwasserreaktoren. Im weiteren Fortgang komme ich auf alternative Reaktorkonzepte wie den Mono-Fluid-Salzschnmelze-Reaktor und die Schnellspaltreaktortechnik zu sprechen. Dieser Abriss führt mich dann direkt zum Dual Fluid Reaktor, dessen Konzept ich, mit seinen essentiellen Vorteilen gegen über den anderen Reaktorkonzepten, vorstellen werde.

Ansprechpartner: [J. Schnack](#)

Kolloquium Mathematische Physik

Thema: [Causal Fermion Systems and Unitary Group Integrals](#)

Datum: 13.01.23

Uhrzeit: 16:15

Ort: D5-153

Vortragender: [Felix Finster](#)

Universität Regensburg

Inhalt:

The theory of causal fermion systems is an approach to describe fundamental physics. It gives quantum mechanics, general relativity and quantum field theory as limiting cases and is therefore a candidate for a unified physical theory. Moreover, causal fermion systems provide a general framework for modelling and analyzing non-smooth spacetime structures. The dynamics of a causal fermion system is described by a nonlinear variational principle, the causal action principle. In the talk I will give a non-technical introduction. Then I will define the quantum state of a causal fermion system. Its computation involves unitary group integrals. I will show the different integrals and explain the scaling limit which we are interested in. I am reporting on joint work with Niky Kamran and Moritz Reintjes.?

Ansprechpartner: [G. Akemann](#)

Seminar Hochenergiephysik

Thema: [Real-time evolution of a scalar field using the complex Langevin equation](#)

Datum: 23.02.23

Uhrzeit: 14:15

Ort: D6-135

Vortragender: Nina Lampl

Universität Graz

Inhalt:

Lattice calculations of real-time dynamics in Minkowski space suffer from the so-called sign-problem, which means that there is a non-positive weight in the path integral and thus one cannot use importance sampling. This lack of a well-defined probability measure can be overcome by complexifying the Langevin equation, which is called complex Langevin approach. In this talk I will show results from the Langevin equation for a real-time evolution of a scalar ϕ^4 theory. This approach however fails for

longer time-contours, due to the appearance of long tailed distributions in the solution. This is why the aim is to use the freedoms of the Langevin equation with machine learning techniques in order to achieve a correct result.

Ansprechpartner: [W. Unger](#)

Seminar Kondensierte Materie

Thema: [Approaching the classical limit of Lindblad dynamics - emergence of limit cycles, fixed points and algebraic decay](#)

Datum: 27.01.23

Uhrzeit: 14:15

Ort: D5-153

Vortragender: Masudul Haque

TU Dresden

Inhalt: Iconic features of classical dissipative dynamics include persistent limit-cycle oscillations and critical slowing down at the onset of such oscillations, whereby the system relaxes purely algebraically in time. On the other hand, quantum systems subject to generic Markovian dissipation decohere exponentially in time, approaching a unique steady state. Here we show how coherent limit-cycle oscillations and algebraic decay can emerge in a quantum system governed by a Markovian master equation. We illustrate these mechanisms using a single-spin model motivated by Landau-Lifshitz-Gilbert dynamics, and using a bosonic model with dissipation.

Ansprechpartner: [FOR2692/Jürgen Schnack](#)

Seminar Mathematische Physik

Thema: [-regularized Lattice Field Theory](#)

Datum: 19.01.23

Uhrzeit: 16:00

Ort: D5-153

Vortragender: Tobias Hartung

University of Bath

Inhalt:

Ansprechpartner: [Gernot Akemann](#)

Seminar Bielefeld-Melbourne Zufallsmatrizen

Thema: [Stable invariant Hermitian random matrices and the rate of convergence](#)

Datum: 22.03.23

Uhrzeit: 09:00

Ort: ZOOM / Konferenzschaltung

Vortragender: Jiyuan Zhang

KU Leuven

Inhalt:

Ansprechpartner: [Mario Kieburg](#)