Kolloquium

Thema: From coherent Raman microscopy to coherent Raman endoscopy

Datum: 16.04.18

Uhrzeit: 16:15

Ort: H6

Vortragender: Prof. Hervé Rigneault

Institut Fresnel, Marseille

Inhalt: Coherent Raman scattering (CRS) microscopy has become an established imaging techniques that as proved to have ground breaking potential in various application fields including cell machinery and tissue imaging. Recently the ability of CRS to distinguished cell nuclei from cell cytoplasm has opened the route toward coherent Raman histology, with potential applications in real time intra-operative cancer tissue diagnostic. However CRS for in vivo applications would require to access the vibrational spectrum information for every pixel in few microseconds only. We have developed a fast ratio-metric stimulated Raman (SRS) technology using a frequency modulation scheme to access vibrational information in few microseconds and suitable for tissue drug penetration monitoring and stimulated Raman histology. We are also working to extend the CRS imaging ability into flexible endoscopes that would enable intra vital exploration and remote CRS histology. Using hollow core fiber and resonant distal scanner we perform CRS images at few frames/s over a 350 microns field of view. This brings label free nonlinear imaging at the distal end of a flexible probe.

Ansprechpartner: T. Huser

Kolloquium Mathematische Physik

Thema: tba
Datum: 01.06.18

Uhrzeit: 16:15

Ort: U2-222

Vortragender: Ivan Veselic

TU Dortmund

Inhalt:

Ansprechpartner: M. Baake

Seminar Hochenergiephysik

Complex Langevin simulations of a finite density matrix model for QCD

Datum: 12.04.18

Uhrzeit: 14:15

Ort: D6-135

Vortragender: Savvas Zafeiropoulos

Univ. Heidelberg

We study the Stephanov model, which is an RMT model for QCD at finite density, using the Complex Langevin algorithm. The Langevin algorithm (Stochastic Quantization) is not based on Markov Chain Monte Carlo methods and consequently does not suffer from the infamous sign problem that hampers studies at finite baryon density. Naive implementation of the algorithm shows convergence towards the phase quenched or quenched theory rather than to the intended theory with dynamical quarks. A detailed analysis of this issue and a potential resolution of the failure of this algorithm are discussed. We study the effect of gauge cooling on the Dirac eigenvalue distribution and time evolution of the norm for various cooling norms, which were specifically designed to remove the pathologies of the complex Langevin evolution. The cooling is further supplemented with a shifted representation for the random matrices. Additionally, we study the newly proposed deformation technique and a novel
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Ansprechpartner: Ch. Schmidt

Seminar Kondensierte Materie

Thema: Realistische thermodynamische Kreisprozesse

Datum: 19.04.18

Uhrzeit: 14:15

Ort: D5-153

Vortragender: Christian Beckmann

Universität Bielefeld

Inhalt:

Ansprechpartner: Jürgen Schnack

Seminar Mathematische Physik

Thema: Eigenvector-related correlation functions and their connection with generalized chiral random matrix ensembles with a source

Datum: 11.01.18

Uhrzeit: 16:00

Ort: D5-153

Vortragender: Jacek Grela

LPTMS Université Paris-Sud
Inhalt:


Ansprechpartner: Gernot Akemann

Seminar AG Zufallsmatrizien

On statistics of bi-orthogonal eigenvectors in real and complex Ginibre ensembles: combining partial Schur decomposition with supersymmetry

Thema: supersymmetry

Datum: 18.04.18

Uhrzeit: 16:00

Ort: V3-201

Vortragender: Yan Fyodorov

King's College London

I will present a method of studying the joint probability density (JPD) of an eigenvalue and the associated 'non-orthogonality overlap factor' (also known as the condition number) of the left and right eigenvectors for non-selfadjoint Gaussian random matrices. First I derive the exact finite-$N$ expression in the case of real eigenvalues and the associated non-orthogonality factors in the real Ginibre ensemble, and then analyse
Inhalt: I will present a method of studying the joint probability density (JPD) of an eigenvalue and the associated 'non-orthogonality overlap factor' (also known as the condition number) of the left and right eigenvectors for non-selfadjoint Gaussian random matrices. First I derive the exact finite-N expression in the case of real eigenvalues and the associated non-orthogonality factors in the real Ginibre ensemble, and then analyse its 'bulk' and 'edge' scaling limits. The ensuing distributions are maximally heavy-tailed, so that all integer moments beyond normalization are divergent. Then I present results for a complex eigenvalue and the associated non-orthogonality factor in the complex Ginibre ensemble complementing recent studies by P. Bourgade & G. Dubach. The presentation will be mainly based on the paper arXiv: 1710.04699 and a joint work with Jacek Grela and Eugene Strahov arXiv: 1711.07061.

Ansprechpartner: Gernot Akemann