Aktuelle Veranstaltungen

Kolloquium

Thema: Magnon Transport in Spin Textures

Datum: 14.05.18

Uhrzeit: 16:15

Ort: H6

Vortragender: Dr. Helmut Schultheiss

Helmholtz-Zentrum Dresden-Rossendorf

Inhalt:

One of the grand challenges in cutting edge quantum and condensed matter physics is to harness the spin degree of electrons for information technologies. While spintronics, based on charge transport by spin polarized electrons, made its leap in data storage by providing extremely sensitive detectors in magnetic hard-drives, it turned out to be challenging to transport spin information without great losses. With magnonics a visionary concept inspired researchers worldwide: Utilize magnons - the collective excitation quanta of the spin system in magnetically ordered materials - as carriers for information. Magnons are waves of the electrons’ spin precessional motion. They propagate without charge transport and its associated Ohmic losses, paving the way for a substantial reduction of energy consumption in computers. While macroscopic prototypes of magnonic logic gates have been demonstrated, the full potential of magnonics lies in the combination of magnons with nano-sized spin textures. Both magnons and spin textures share a common ground set by the interplay of dipolar, spin-orbit and exchange energies rendering them perfect interaction partners. Magnons are fast, sensitive to the spins’ directions and easily driven far from equilibrium. Spin textures are robust, non-volatile and still reprogrammable on ultrashort timescales. The vast possibilities offered by combining this toolset of magnetic phenomena, add value to both magnonics and the fundamental understanding of complex spin textures. I will give an introduction about magnon propagation and manipulation in microstructures with non-collinear spin textures, in particular magnons propagating in nano channels formed by magnetic domain walls. Furthermore, I will address how magnons can be excited in domain wall channels by pure spin currents originating from the spin Hall effect. References: [1] K. Wagner, A. Kákay, K. Schultheiss, A. Henschke, T. Sebastian, and H. Schultheiss, Nature Nanotech 11, 432 (2016). [2] K. Vogt, F. Y. Fradin, J. E. Pearson, T. Sebastian, S. D. Bader, B. Hillebrands, A. Hoffmann, and H.
Schultheiss, Nat Comms 5, 3727 (2014).

Ansprechpartner: G. Reiss

Kolloquium Mathematische Physik

Thema: Floquet Theory for Markov Processes

Datum: 18.05.18

Uhrzeit: 16:15

Ort: U2-222

Vortragender: Thomas Kriecherbauer

Universität Bayreuth

Motivated by applications from biology and physics we discuss Markov jump processes in finite state spaces with transition rates that depend periodically on time. Our main result provides conditions under which such processes are attracted by periodically varying probability distributions. The elementary proof is based on the analysis of a special class of systems of ordinary differential equations with topological fixed-point arguments being used in the non-linear case. The presentation reports on a recent paper with Lars Grüne (Bayreuth) and Michael Margaliot (Tel Aviv) http://dx.doi.org/10.1098/rsos.172157.

Ansprechpartner: G. Akemann

Seminar Hochenergiephysik

Thema: The QCD crossover up to $O(\mu^6 \lambda)$ from Lattice QCD

Datum: 29.05.18

Uhrzeit: 14:00

Ort: D6-135
Seminar Kondensierte Materie

Irreversibility in active matter systems: Fluctuation theorem and mutual information

Datum: 04.05.18
Uhrzeit: 14:15
Ort: D5-153

Vortragender: Lennart Dabelow
Universität Bielefeld

Ansprechpartner: F. Karsch

Seminar Mathematische Physik

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: Peter Reimann

Ansprechpartner: Gernot Akemann

Seminar AG Zufallsmatrizen

Symmetry Transition Preserving Topology for Real Gaussian Random Matrices

Datum: 16.05.18

Uhrzeit: 16:15

Ort: V3-201

Vortragender: Adam Mielke

Bielefeld
Inhalt:

Ansprechpartner: Gernot Akemann