

VORTRAGSEINLADUNG

im Rahmen des gemeinsamen Berufungsverfahrens
der Freien Universität Berlin und des Helmholtz-Zentrums Berlin
W1-Professur "Theory of Quantum Magnetism (BerlQuaM)"

am 26. November 10.45 Uhr
**Helmholtz-Zentrum Berlin, Lise Meitner Campus,
Hahn Meitner Platz 1, 14109 Berlin, Raum PT 104**
(Bitte bringen Sie zum Zugang aufs Gelände Ihren Personalausweis mit!)

„A functional renormalization-group approach for frustrated quantum spin-systems“

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The investigation of frustrated quantum magnetism in generic spin systems is a fascinating field in condensed matter physics. In recent years, new classes of materials such as spin-orbit coupled quantum magnets have significantly broadened this research area. For a theoretical description of such systems, the development of novel theoretical approaches is highly desirable. In this talk I will present a new method for frustrated spin-1/2 models, based on the functional renormalization group (FRG) technique for pseudo fermions. As our main diagnostic tool, we study spin and dimer susceptibilities to characterize magnetic and non-magnetic phases of various frustrated spin systems. Results for the ground-state phases of Heisenberg models on the square and kagome lattice are compared to other methods such as density matrix renormalization group. Particular attention is paid to the Heisenberg-Kitaev model on the honeycomb lattice which has been proposed to be realized in certain strongly spin-orbit coupled iridate compounds. Comparing our thermodynamic susceptibility data to experimental results allows us to describe a possible scenario of microscopic interactions in the iridates. Due to the large class of spin systems that can be treated within the pseudo fermion FRG, this technique will find a plethora of future applications in the field of quantum magnetism.