

Tuesday, February 05th 2019 (House of Science Bremen/Downtown)

- 08:00 - 08:50 Registration
- 08:50 - 09:00 Opening and welcome, Tim Wehling
- Session:** Dynamical Mean Field Theory and diagrammatic extensions thereof
- 09:00 - 09:40 Philipp Werner, University of Fribourg (Switzerland)
GW+DMFT simulation of lattice models in and out of equilibrium
- 09:40 - 10:20 Alexander I. Lichtenstein, University of Hamburg (Germany)
Nonlocal correlated effects in magnetic materials
- 10:20 - 10:50 Coffee Break
- 10:50 - 11:30 Erik van Loon, University of Bremen (Germany)
Dual boson approach to spatial correlations
- 11:30 - 12:10 James LeBlanc, Memorial University of Newfoundland, St. John's (Canada)
Hubbard-like models: challenges and solutions via analytic treatments of numerical problems
- 12:15 - 13:50 Lunch Break (Restaurant Q1) and Coffee
- Session:** Quantum Cluster Approaches
- 13:50 - 14:30 Johannes Lischner, Imperial College London (United Kingdom)
Many-body perturbation theory beyond GW
- 14:30 - 15:00 Coffee Break
- 15:00 - 15:40 André-Marie S. Tremblay, University of Sherbrooke, Québec (Canada)
Antagonistic effects of nearest-neighbor repulsion on the superconducting pairing dynamics in the doped Mott insulator regime
- 15:40 - 16:20 Round Table Discussion - Diagrammatic and cluster extensions of DMFT: where are we?
- 18:20 Pickup to Welcome Reception (The Bremen Town Musicians, the Statue near the town hall)
- 18:30 - 21:30 Welcome Reception (Bremen Town Hall)

Wednesday, February 06th 2019 (House of Science Bremen/Downtown)

- Session:** Coupled cluster, FCIQMC and related quantum chemical approaches
- 09:00 - 09:40 Lucas K. Wagner, University of Illinois at Urbana-Champaign, Illinois (USA)
Model Hamiltonians from ab-initio quantum Monte Carlo calculations
- 09:40 - 10:20 George Booth, King's College London (United Kingdom)
'Static' mean-field theory, 'Dynamical' mean-field theory, and 'Static Dynamical' mean-field theory
- 10:20 - 10:50 Coffee Break
- 10:50 - 11:30 Silke Biermann, Ecole Polytechnique, Palaiseau (France)
Non-local interactions and non-local correlations: examples of dynamical mean field calculations for realistic materials
- 11:30 - 12:10 Tianyu Zhu, California Institute of Technology, Pasadena, California (USA)
Correlated Green's functions in materials: towards an ab initio treatment of the Kondo problem
- 12:10 - 13:50 Lunch Break (Restaurant Q1) and Coffee
- Session:** Constrained many-body perturbation theory, density functional theory and related methods I
- 13:50 - 14:30 Matteo Cococcioni, Swiss Federal Institute of Technology, Lausanne (Switzerland)
Ab initio modeling of transition metal compounds using the extended DFT+U+V with self-consistent Hubbard parameters
- 14:30 - 15:10 Ferdi Aryasetiawan, Lund University (Sweden)
The impact of long-range interaction on the electronic structure of correlated materials
- 15:10 - 15:50 Malte Rösner, Radboud University, Nijmegen (The Netherlands)
cRPA simulations of layered materials
- 15:50 - 16:20 Coffee Break
- 16:20 - 17:00 Ryotaro Arita, University of Tokyo (Japan)
Self-energy variational approach to correlated electron systems
- 17:00 - 17:40 Malte Schüler, University of Bremen (Germany)
The Peierls-Feynman variational principle: applications to the extended Hubbard model and real materials
- 17:40 - 18:20 Round Table Discussion - Towards real materials: all ab-initio versus hybrid approaches in the wave function, Green function and density functional domain
- 18:40 Bus Pickup to Conference Dinner (Radisson Blu Hotel, Wachtstraße)
- 19:00 - 22:30 Conference Dinner (Restaurant Juergenshof)

Thursday, February 07th 2019 (House of Science Bremen/Downtown)

- Session:** Lattice Quantum Monte Carlo
- 09:00 - 09:40 Stefan Wessel, RWTH Aachen University (Germany)
Nonlocal density interactions in auxiliary-field quantum Monte Carlo simulations
- 09:40 - 10:20 Thomas Devereaux, Stanford University, California (USA)
Metallic transport, CDWs, and pairing without quasiparticles in the Hubbard model
- 10:20 - 10:50 Coffee Break
- 10:50 - 11:30 Andrew Millis, Flatiron Institute, City of New York, New York (USA)
Ground-state properties of the Hydrogen chain, and beyond
- 11:30 - 12:10 Sandro Sorella, International School for Advanced Studies (SISSA), Trieste (Italy)
New insights in the sign problem within the auxiliary field quantum Monte Carlo technique
- 12:10 - 13:50 Lunch Break (Restaurant Q1) and Coffee
- Session:** Diagrammatic Monte Carlo
- 13:50 - 14:30 Boris Svistunov, University of Massachusetts Amherst, Massachusetts (USA)
Polynomial complexity despite the fermionic sign
- 14:30 - 15:10 Nikolay Prokofiev, University of Massachusetts Amherst, Massachusetts, (USA)
Dirac liquids and interacting topological insulators by Diagrammatic Monte Carlo
- Session:** Functional Renormalization Group
- 15:10 - 15:50 Sabine Andergassen, University of Tübingen (Germany)
Multiloop functional renormalization group for response functions
- 15:50 - 16:30 Shan-Wen Tsai, University of California Riverside, California (USA)
Effects of retardation in the renormalization group approach to interacting fermions
- 17:25 Poster Mounting
- 17:30 - 21:00 Poster Session + Catering Buffet (House of Science)

Friday, February 08th 2019 (House of Science Bremen/Downtown)

- Session:** Constrained many-body perturbation theory, density functional theory and related methods II
- 09:00 - 09:40 Carsten Honerkamp, RWTH Aachen University (Germany)
Effective interactions from cFRG
- 09:40 - 10:20 Alexander Steinhoff, University of Bremen (Germany)
GW+T-Matrix approach to the excitonic Mott transition
- 10:20 - 10:50 Coffee Break
- 10:50 - 11:30 Mark van Schilfhaar, King's College London (United Kingdom)
QSGW+DMFT: accurate, nearly ab initio many-body treatment of strong correlations
- 11:30 - 12:30 Concluding Round Table Discussion - How to approach correlated materials with non-local interactions realistically: next steps
- 12:30 - 12:45 Closing words and departure

Conference Organisers

- Tim O. Wehling University of Bremen, Germany
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- Thomas Frauenheim University of Bremen, Germany
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