

ELECTRONIC CORRELATIONS AND DISORDER IN QUANTUM MATTER

Workshop in Honor of Peter Wölfle's 70th Birthday

31. March - 3. April 2012

KARLSRUHE INSTITUTE OF TECHNOLOGY, LEHMANN LECTURE HALL

Saturday, 31 March 2012

18:00-20:30 Registration / Welcome buffet

Sunday, 01 April 2012

08:00-09:00 Registration at the Lehmann Lecture Hall

09:00-09:15 Opening Remarks

Chair: G. Schön

09:15-09:45 L. Molenkamp, Universität Würzburg

Dirac fermions in HgTe

09:45-10:15 M. Vojta, TU Dresden

The fate of topological-insulator surface states under strong disorder

10:15-10:45 P. Coleman, Rutgers University, Piscataway

Giant Ising Anisotropy and Hysteric Order in URu₂Si₂

10:45-11:15 **Coffee Break**

11:15-11:45 G. Kotliar, Rutgers University, Piscataway

**Layered Iron Pnictides and Chalcogenides:
a new class of strongly correlated electron materials**

11:45-12:15 P. Hirschfeld, University of Florida, Gainesville

Diversity of pairing states in Fe-based superconductors

12:30-14:30 **Lunch**

Chair: J. von Delft

14:30-15:00 A. Finkelstein, Texas A & M University, College Station

Fluctuation effects in superconducting films

15:00-15:30 I. Gornyi, KIT

Enhancement of superconductivity by Anderson localization

15:30-16:00 C. Marcus, University of Copenhagen, Denmark

Using the exchange interaction for fast qubit control

16:30-18:30 **Poster Sessions**

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Monday, 02 April 2012

Chair: W. Zwerger

- 09:00-09:30 **C. Varma, University of California, Riverside**
Loop Current Ordered States and Associated Phenomena
- 09:30-10:00 **R. Thomale, Stanford University,**
Topological Superconductivity
- 10:00-10:30 **P. Ostrovsky, KIT**
Metal-insulator transition in disordered systems with chiral symmetry
- 10:30-11:00 **Coffee Break**
- 11:00-11:30 **K. Le Hur, Ecole Polytechnique & CNRS, Yale University**
Electronic Correlations and Topological Phases
- 11:30-12:00 **A. Rosch, Universität zu Köln**
Topological insulators in magnetic fields
- 12:30-14:30 **Lunch**

Chair: K. Schönhammer

- 14:30-15:00 **L. Glazman, Yale University**
Inelastic electron backscattering in a generic helical edge
- 15:00-15:30 **T. Giamarchi, University of Geneva**
Disordered Luttinger Liquids
- 15:30-16:00 **P. Schmitteckert, KIT**
Transport properties of strongly correlated nanostructures
- 16:00-16:30 **Coffee Break**
- 16:30-17:00 **A. Balatsky, Los Alamos National Lab.**
Hidden order, pseudogap and hybridization in URu₂Si₂
- 17:00-17:30 **J. Kroha, Universität Bonn**
Microdomain formation near the first-order Mott-Hubbard transition
- 18:30---** **Conference Dinner in the Gastdozentenhaus Heinrich Hertz**

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Tuesday, 3 April 2012

Chair: Y. Gefen

- 09:00-09:30 **J. Mannhart, MPI f. Festkörperforschung, Stuttgart**
Coexistence of 2-D Superconductivity and Ferromagnetism at the LaAlO₃-SrTiO₃ Interface
- 09:30-10:00 **T. Kopp, Universität Augsburg**
The complexity of cuprate grain boundaries -- it can be simple after all
- 10:00-10:30 **D. Vollhardt, Universität Augsburg**
Quantification of correlations in quantum many-particle systems
- 10:30-11:00 **Coffee Break**
- 11:00-11:30 **A. Kamenev, University of Minnesota, Minneapolis**
Dynamics of doublons in optical lattices
- 11:30-12:00 **C. Soukoulis, Iowa State University, Ames**
Wave propagation: From electrons to photonic crystals and metamaterials
- 12:30-14:30 **Lunch**

Chair: N. Perkins

- 14:30-15:00 **E. Abrahams, UCLA, Los Angeles**
Theory of critical quasiparticles
- 15:00-15:30 **A. Chubukov, University of Wisconsin, Madison**
Superconductivity and spin density wave in doped graphene
- 15:30-16:00 **J. D. Thompson, Los Alamos National Lab.**
Mesoscale electronic heterogeneity in Ce-115 heavy-fermion and related materials
- 16:00-16:30 Coffee break**
- 16:30-17:00 **W. Metzner, MPI f. Festkörperforschung, Stuttgart**
Nematic quantum criticality
- 17:00-17:30 **H. v. Löhneysen, KIT**
Quantum phase transitions in Kondo systems
- 17:30-18:00 **Closing**