



WILLIAM I. FINE THEORETICAL PHYSICS INSTITUTE

Frontiers of Condensed Matter Theory

May 4 - 7, 2006

Cowles Auditorium, Hubert H. Humphrey Center, West Bank Campus

Thursday, May 4, Morning

8:30 - 9:00 REGISTRATION in Humphrey Center Atrium

Plenary Session - Many-Body Dynamics of Interacting Systems

9:00 - 9:45 **Anthony Leggett**, UIUC
"Superfluid Fermi liquids in the 60's and to-day"

9:45 - 10:30 **Boris Altshuler**, Columbia University
"Classical dynamics of quantum condensates"

10:30 - 11:00 COFFEE BREAK in Atrium

11:00 - 11:45 **Daniel Fisher**, Harvard University
"Dynamics of glass transitions: Simple models and prospects for phenomenological theory"

11:45 - 12:30 **Igor Aleiner**, Columbia University
"Many-body localization in weakly interacting systems"

12:45 - 2:00 p.m. LUNCH

Thursday, May 4, Afternoon

Session 1 - Disordered Systems

2:00 - 2:30 p.m. **Valerii Vinokur**, Argonne National Laboratory
"Hopping conductivity in granular metals and superconductors"

2:30 - 3:00 **Thierry Giamarchi**, University of Geneva
"Transport and aging in disordered elastic systems"

3:00 - 3:30 **Mikhail Feigelman**, Landau Institute
"Superconductor-insulator-metal transitions"

3:30 - 4:00 COFFEE BREAK in Atrium

4:00 - 4:30 **Mikhail Skvortsov**, Landau Institute
"Local correlations of different eigenfunctions in a disordered wire"

4:30 - 5:00 **Akira Furusaki**, RIKEN
"Surface multifractality of critical wave functions in two dimensions"

5:00 - 5:30 **Alexander Finkelstein**, Weizmann Institute of Science
 "*'Metal-Insulator' transition in a system of tunneling vortices*"

Session 2 - Mesoscopic Systems

2:00 - 2:30 p.m. **Yuli Nazarov**, Kavli Institute, Delft TU
 "*Phenomenology of quantum phase slips*"

2:30 - 3:00 **Markus Buttiker**, University of Geneva
 "*Departures from Onsager symmetries in nonlinear conduction*"

3:00 - 3:30 **Frank Hekking**, Joseph Fourier University
 "*Qubits as probes for quantum noise of mesoscopic conductors*"

3:30 - 4:00 COFFEE BREAK in Atrium

4:00 - 4:30 **Lev Ioffe**, Rutgers University
 "*Quantum error correction in software and hardware*"

4:30 - 5:00 **Yuri Galperin**, University of Oslo
 "*Decoherence in Josephson qubits due to $1/f$ noise*"

5:00 - 5:30 **Leonid Levitov**, MIT
 "*Coherent Quasiclassical Dynamics of a Quantum Bit*"

Friday, May 5, Morning

Plenary Session - Superconductivity

9:00 - 9:45 **Lev Gorkov**, NHMFL, Florida
 "*Current situation in cuprates*"

9:45 - 10:30 **Patrick Lee**, MIT
 "*Spin liquid, fractionalization and gauge field: two decades after Ioffe-Larkin*"

10:30 - 11:00 COFFEE BREAK in Atrium

11:00 - 11:45 **Matthew Fisher**, KITP UCSB
 "*Fate of the Josephson effect in low dimensional superconductors*"

11:45 - 12:30 **Gianni Blatter**, ETH Zurich
 "*Vortex matter*"

12:45 - 2:00 p.m. LUNCH

Friday, May 5, Afternoon

Session 1 - Superconductivity

- 2:00 - 2:30 p.m. **Carlo DiCastro**, Universita' Roma La Sapienza
"Fluctuating charge order in cuprates"
- 2:30 - 3:00 **Kazumi Maki**, USC
"Dialectic of high T_c cuprate superconductivity"
- 3:00 - 3:30 **Yury Ovchinnikov**, Landau Institute
"Superconductivity of the magic and near magic clusters"
- 3:30 - 4:00 COFFEE BREAK in Atrium
- 4:00 - 4:30 **Andrey Varlamov**, Universita' Tor Vergata
"Magnetoconductivity of granular superconductor above the local transition temperature"
- 4:30 - 5:00 **Alexei Koshelev**, Argonne National Laboratory
"Breakdown of Ginzburg-Landau theory and fluctuations in two-band superconductor (MgB_2)"
- 5:00 - 5:30 **Elihu Abrahams**, Rutgers University
"Thermodynamics near a heavy fermion quantum critical point"

Session 2 - Spin Effects in Solids

- 2:00 - 2:30 p.m. **Chandra Varma**, UC Riverside
"From Larkin-Melnikov to deconstruction of Kondo effect near an antiferromagnetic transition"
- 2:30 - 3:00 **Victor Galitski**, University of Virginia
"Spin diffusion in spin-orbit coupled systems"
- 3:00 - 3:30 **Peter Woelfle**, University of Karlsruhe
"Quantum corrections to the anomalous Hall effect in ferromagnetic Fe films"
- 3:30 - 4:00 COFFEE BREAK in Atrium
- 4:00 - 4:30 **Alexei Tselik**, Brookhaven National Laboratory
"Finite T Ising model correlation functions: beyond semiclassical approximation"
- 4:30 - 5:00 **Ben Simons**, Cambridge University
"Metamagnetic quantum criticality"
- 5:00 - 5:30 **Gerd Schoen**, University of Karlsruhe
"On decoherence in solid state qubits"

Saturday, May 6, Morning

Plenary Session - Electrons in Low Dimensions

- 9:00 - 9:45 **Bertrand Halperin**, Harvard University
"Proposals to verify non-abelian statistics in the $\nu=5/2$ fractional quantized Hall state"
- 9:45 - 10:30 **Ravindra Bhatt**, Princeton University
"Study of integer and fractional quantum Hall effect using topological quantum numbers", or "Ferromagnetism in low carrier density systems"
- 10:30 - 11:00 COFFEE BREAK in Atrium
- 11:00 - 11:45 **Steven Kivelson**, Stanford University
"Theory of electronic microemulsions"
- 11:45 - 12:30 **Konstantin Efetov**, Ruhr-Universitaet Bochum
"Non Fermi liquid behavior of a Fermi gas with a repulsion"
- 12:45 - 2:00 p.m. LUNCH

Saturday, May 6, Afternoon

Session 1 - Electrons in Low Dimensions

- 2:00 - 2:30 p.m. **Vladimir Falko**, Lancaster University
"Berry phase 2π , Landau level degeneracy and quantum Hall effect in a bilayer of graphene"
- 2:30 - 3:00 **Thomas Natterman**, University of Cologne
"Coulomb blockade and transport in a chain of one-dimensional quantum dots"
- 3:00 - 3:30 **Yuval Gefen**, Weizmann Institute of Science
"Fractional charge and fractional statistics"
- 3:30 - 4:00 COFFEE BREAK in Atrium
- 4:00 - 4:30 **Paul Wiegmann**, University of Chicago
"Quantum shock waves: hydrodynamics instabilities in electronic systems"
- 4:30 - 5:00 **Konstantin Matveev**, Argonne National Laboratory
"Spontaneous spin polarization in quantum wires"
- 5:00 - 5:30 **Andrey Chubukov**, UW Madison
"Singularities in the thermodynamics of 2D Fermi systems"

7:00 p.m. SOCIAL HOUR AND WORKSHOP DINNER

Session 2 - Chaos and RMT

- 2:00 - 2:30 p.m. **Vladimir Kravtsov**, ICTP - Trieste
"Multiple-photon absorption in a quantum dot: Going beyond RMT"
- 2:30 - 3:00 **Hans Weidenmuller**, MPI Heidelberg
"Interactions and disorder in quantum dots"
- 3:00 - 3:30 **Maxim Vavilov**, Yale University
"Quantum chaos and quantum disorder in Andreev billiards"
- 3:30 - 4:00 COFFEE BREAK in Atrium
- 4:00 - 4:30 **Vladimir Zelevinsky**, Michigan State University
"Many-body quantum chaos and nuclear physics"
- 4:30 - 5:00 **Shinobu Hikami**, University of Tokyo
"Edge singularities in a random matrix theory"
- 5:00 - 5:30 **Chushun Tian**, University of Cologne
"Ehrenfest time insensibility of universal conductance fluctuations"
- 7:00 p.m. SOCIAL HOUR AND WORKSHOP DINNER

Sunday, May 7, Morning

Plenary Session - Glassy Systems

- 9:00 - 9:45 **David Khmel'nitskii**, Cambridge University
"On irreversibility"
- 9:45 - 10:30 **John Chalker**, Oxford University
"Correlations and dynamics in classical frustrated antiferromagnets"
- 10:30 - 11:15 **Alexander Patashinski**, Northwestern University
"Amorphous matter: between order and disorder"
- 11:15 - 11:45 COFFEE BREAK in Atrium
- 11:45 - 12:30 **Michael Fogler**, UC San Diego
"Charge order in high Landau levels"
- 12:30 - 1:00 **Serguei Brazovskii**, LPTMS
"Recent impacts of A.Larkin legacy on pinning in sliding CDWs"

1:00 - 1:30

Boris Spivak, University of Washington
"Propagation of waves in disordered media"

1:30 - 2:00

Vadim Geshkenbein, ETH - Zurich
"Dynamic approach for the strong pinning"