

**Tuesday, October 4**



Morning session  
Chairman W. Hofstetter

**8:30 P. Prelovšek**, Ljubljana  
Spin fluctuations in cuprates and mechanism of high  $T_c$

**9:05 A. Rosch**, Köln, Germany  
Dephasing by Kondo impurities: discussion of the local criticality mysticism

**9:40 K. McElroy**, Berkeley, USA  
Autocorrelating ARPES: Bridging momentum and real space probes

**10:15** coffee break

**10:40 E.V. Sampathkumaran**, Mumbai, India  
Transport anomalies in ternary rare-earth compounds of the type,  $RCuAs_2$

**11:15 A. Finkelstein**, Rehovot, Israel  
Fermi-liquid description of a system with a weak spin-orbit interaction: chiral-spin resonance and spin-Hall conductivity

**11:50 M. Fabrizio**, Trieste, Italy  
Strongly correlated superconductivity: hints from the Kondo physics

**12:25 H. Keiter**, Dortmund, Germany  
Towards a solution of the CTMA integral equations and its implications for the dynamics of strongly correlated electron systems

Lunch & afternoon break

Afternoon session, Chairman K. Yamada

**17:00** Poster session + discussions (tea/coffee)

**17:35 G. Mihály**, Budapest, Hungary  
Exchange coupling in ferromagnetic (In,Mn)Sb

**18:10 C. Honerkamp**, Würzburg, Germany  
Charge instabilities at the metamagnetic transition

**18.45** Discussion/presentation session on topics and talks of the day

**Wednesday, October 5**



Morning session Chairman  
J. Freericks

**8:30 T. Costi**, Jülich, Germany  
Transport and optical properties of heavy fermions

**9:05 F. Becca**, Trieste, Italy  
Improved variational approach to strongly correlated systems: The RVB paradigm at work

**9:40 D. Logan**, Oxford, UK  
Transport and optics of paramagnetic heavy fermions

**10:15** coffee break

**10:40 A. Aligia**, Bariloche, Argentina  
Quantum phase diagram, ferroelectricity and fractional charge excitations in the ionic Hubbard model

**11:15 G. Zwicknagl**, Braunschweig, Germany  
The dual nature of 5f electrons: Spectral functions, heavy fermions and cooperative phenomena

**11:50 D. Poilblanc**, Toulouse, France  
Doped 2D frustrated magnets: spin-charge separation and unconventional superconductivity

**12:25 K. Yamada**, Kyoto, Japan  
Theory of Superconductivity in Strongly Correlated Electron Systems

Lunch & afternoon break

Afternoon session, Chairman V. Zlatić

**16:30** Poster session+discussions (tea/coffee)

**17:00 P. van Dongen**, Mainz, Germany  
Orbital-selective Mott transitions in the anisotropic two-band Hubbard model at finite temperatures

**17:35 R. Hlubina**, Bratislava, Slovakia  
Superconducting state of correlated metals

**18:10** Closing the conference: A. Hewson and V. Zlatić

### Scope of the Conference

The conference will deal with strongly correlated electron systems. The emphasis will be on the unifying concepts which pertain to most, if not all, electron systems with short-range screened Coulomb interactions. These materials exhibit various remarkable anomalies and pose many difficult experimental and theoretical questions. Bringing together some of the most active experimental and theoretical physicists working in the field of electron correlation, we would like to achieve the following:

- To review the most interesting results relevant for strongly correlated systems.
- To focus both on the similarities and differences among various correlated systems.
- To review and discuss the main concepts used in the studies of electron correlation.
- To examine how close the experiments and theory come together, and to guess what comes next.

The aim of the meeting is not so much to offer the 'present-day solution' of various anomalies observed in strongly correlated systems but, rather, to characterize and describe the anomalies, so as to find a common element in the experimental results.



# Conference on Concepts in Electron Correlations

**September 30<sup>th</sup> – October 5<sup>th</sup> 2005  
Hvar, Croatia**

web site  
[hvar05.ifs.hr](http://hvar05.ifs.hr)

**Directors:**

**V. Zlatić**, Zagreb, Croatia  
**Alex C. Hewson**, London, UK



# Programme

## Friday, September 30

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Afternoon session  
Chairman V. Zlatić

**16:00 A. Hewson**  
Opening of the Conference

**16:10 K. Ueda**, Tokyo, Japan  
Theory of Kondo transport through quantum dots - equilibrium and nonequilibrium properties

**16:40 S. De Franceschi**, Trieste, Italy  
Electron correlations in carbon nanotubes and semiconductor nanowires

**17:10 F. Anders**, Bremen, Germany  
Real-time dynamics in Quantum Impurity Systems: A Time-dependent Numerical Renormalization Group Approach

**17:40 J. Bonča**, Ljubljana, Slovenia  
Conductance Through Coupled Quantum Dots

**18:10** coffee break

**18:30 A. M. Oleś**, Krakow, Poland  
Magnetic and optical properties of Mott insulators with orbital degrees of freedom (exact results)

**19:00 K. Becker**, Dresden, Germany  
Static and dynamic properties of the spinless Falicov-Kimball model

**20:30** Farewell/Reception party

## Saturday, October 1

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Morning session  
Chairman D. van der Marel

**8:30 Z. X. Shen**, Stanford, USA  
ARPES study of complex oxides

**9:05 N. P. Ong**, Princeton, USA  
Vorticity, phase coherence and the Nernst effect in cuprates

**10:15** coffee break

**10:40 A. Chubukov**, Madison, USA  
Spin-mediated pairing and non-Fermi liquid in electron-doped cuprates

**11:15 P. D. Johnson**, Brookhaven, USA  
High resolution photoemission studies of strongly correlated systems

**11:50 C. Di Castro**, Roma, Italy  
Fluctuating charge ordering in Cuprates

**12:25 J.L. Sarrao**, Los Alamos, USA  
Tuning unconventional superconductors:  $\text{CeN}_2$  and  $\text{PuMGa}_2$

Lunch & afternoon break

Afternoon session, Chairman A. Hewson

**16:30** Poster session + discussions (tea/coffee)

**17:00 S. S. Saxena**, Cambridge, UK  
Elevated temperature superconductivity in graphite intercalates  $\text{C}_6\text{Yb}$  and  $\text{C}_6\text{Ca}$

**17:35 D. van der Marel**, Genève, Switzerland  
Superconductivity induced spectral weight redistribution in cuprate high temperature superconductors

**18:10 J. Hirsch**, La Jolla, USA  
Alternative electrodynamic equations for superconductors: theoretical and experimental implications  
**18.45** Discussion/presentation session on topics and talk of the day

**19:30** Conference diner

## Sunday, October 2

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Morning session  
Chairman P. Littlewood

**8:30 A. Morpurgo**, Delft  
Electronic properties of Alkali-doped metal phthalocyanines

**9:05 E. Tosatti**, Trieste, Italy  
Strong correlations and superconductivity in doped fullerenes and doped phthalocyanines

**9:40 F. Marsiglio**, Alberta, Canada  
Signatures of the Superconducting Mechanism in the Far Infrared

**10:15** coffee break

**10:40 P. Armitage**, Genève, Switzerland  
Cooper Pairs in Flatland: Electrodynamics of the 2D Superconductor-Insulator Quantum Phase Transition

**11:15 V. Pudalov**, Moscow, Russia  
Electron-electron correlations and metallic conduction in 2D

**11:50 O. Gunnarsson**, Stuttgart, Germany  
Electron-phonon coupling in cuprates  
Lunch & afternoon break

Afternoon session, Chairman J. Hirsh

**16:30** Poster session + discussions (tea/coffee)

**17:00 P. Littlewood**, Cambridge, UK  
Cold Fermi gases with multi-channel interactions

**17:35 T. Esslinger**, Zürich, Switzerland  
Bosonic and fermionic atoms hopping on a lattice of light

**18:10 W. Hofstetter**, Aachen, Germany  
Quantum phases of multi-component ultracold atom systems

**18:45** Discussion/presentation session on topics and talks of the day

After dinner talk:

**21:00 P. Littlewood**, Cambridge, USA  
Correlation and coherence

## Monday, October 3

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Morning session  
Chairman P. Prelovšek

**8:30 O. Stockert**, Dresden, Germany  
Superconductivity and antiferromagnetism in  $\text{CeCu}_2\text{Si}_2$

**9:05 H. von Löhneysen**, Karlsruhe, Germany  
Quantum phase transition - hard matter getting soft

**9:40 P. Coleman**, Rutgers, USA  
A new large-N expansion to the Kondo lattice

**10:15** coffee break

**10:40 L. Mihály**, Brookhaven, USA  
High Field ESR on Materials with Magnetic Correlations

**11:15 T. Pruschke**, Göttingen, Germany  
Influence of Hund's rule coupling on the properties of correlated multi orbital models

**13:00-19:00** Conference excursion

After dinner talk:

**21:00 J. Hirsch**, La Jolla, USA  
When is a model a good model?