

Advances in High Temperature Superconductivity
Organizers: A. Auerbach, G. Deutscher, G. Koren and Y. Yeshurun
May 21st-24th, 2001
Kefar Hamaccabiah Hotel
Ramat-Gan, Israel

Cosponsored by
the Heinrich Hertz MINERVA Center for High Temperature Superconductivity
and
the Israel Science Foundation

Program

Sunday, May 20

19:00–21:00 Get together party

Monday, May 21

08:30-08:45 **Welcome**
Y. Yeshurun

Session A. ELECTRONIC PROPERTIES / JUNCTIONS

08:45-09:20 **J. Mannhart**, Augsburg
Interface doping of high- T_c superconductors

09:20-09:55 **S. Kivelson**, UCLA

09:55-10:25 **Coffee Break**

10:25-11:00 **K. Levin**, U. Chicago
Extending BCS theory: Pseudogap effects without spin-charge separation

11:00-11:35 **G. Deutscher**, Tel Aviv University
Evidence for i_d component in overdoped samples

11:35-12:10 **R. Kleiner**, Tübingen
Intrinsic Josephson tunnel junctions in high temperature superconductors

12:10-14:30 **Lunch Break**

Session B. ORDER PARAMETER SYMMETRY

- 14:30-15:05 **G. Blatter**, ETH, Zurich
Superconducting phase qubits for quantum computing
- 15:05-15:40 **L. Alff**, University of Köln
Doping dependence of the symmetry of the superconducting order parameter in electron doped HTS
- 15:40-16:10 **Coffee Break**
- 16:10-16:45 **N. C. Yeh**, California Institute of Technology
Spatially-resolved and doping dependent quasiparticle tunneling spectra and spin transport in cuprate superconductors
- 16:45-17:20 **O. Millo**, The Hebrew University
Scanning tunneling spectroscopy of non-homogeneous high temperature superconductors
- 17:20-17:35 **E. Farber**, Tel Aviv University
Evidence for $i d$ component (tunneling)
- 17:35-17:50 **Y. Dagan**, Tel Aviv University
Evidence for $i d$ component (penetration depth)

Tuesday, May 22

Session C1. HIGH CURRENT APPLICATIONS

- 08:30-09:05 **R. P. Huebener**, Tübingen
Peltier cooling of superconducting current leads
- 09:05-09:40 **H. C. Freyhardt**, Göttingen
Bulk HTS materials and prospects of their application in flywheel systems
- 09:40-10:15 **P. Tixador**, Grenoble
Fault Current Limiter using bulk Y and Bi superconductors
- 10:15-10:45 **Coffee Break**
- 10:45-11:05 **A. Einav**, Chief Scientist, Ministry of National Infrastructures
- 11:05-11:25 **D. Weiner**, Israel Electricity Corporation, Haifa
- 11:25-11:45 **M. Sinvani**, Bar-Ilan University
MRI for brain surgery - hybridization of permanent magnet and superconductor
- 11:45-12:00 **Y. Wolfus**, Bar-Ilan University
Hybridization of SC and permanent magnets in novel MRI scanner
- 12:00-14:30 **Lunch Break**

Session C2. MODELS

- 08:30-09:05 **R. Eder**, Würzburg
Single particle spectrum of an RVB state
- 09:05-09:40 **D. Poilblanc**, Toulouse
- 09:40-10:15 **E. Altman**, The Technion
- 10:15-10:45 **Coffee Break**
- 10:45-11:00 **N. Levy**, The Technion
Symmetry of the order parameter in YBCO films on NdGaO₃
- 11:00-12:00 Workshop: Models
- 12:00-14:30 **Lunch Break**
- 12:00-15:30 *Beirat meeting I (at Bar-Ilan)*
- 15:30 **Leaving hotel for tour of Tel-Aviv/Jaffa**
- 19:30 **Conference dinner (in Tel-Aviv)**

Wednesday, May 23

Session D. PHASE DIAGRAM I

08:30-09:05 **W. Hanke**, Würzburg

Why do stripes form in doped antiferromagnets and what is their relationship to superconductivity?

09:05-09:40 **A. Keren**, The Technion

Superconducting-antiferromagnetic phase separation in the superconducting state of underdoped cuprates as detected by μ SR

09:40-10:15 **K. Moler**, Stanford

Single-vortex flux quantization and dynamics in very underdoped YBCO

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

10:45-11:20 **I. Felner**, The Hebrew University

Coexistence of superconductivity and magnetism

11:20-11:55 **S. C. Zhang**, Stanford

11:55-14:30 **Lunch Break**

Session E. PHASE DIAGRAM II

14:30-15:05 **S. Sachdev**, Yale

Quantum antiferromagnetism and high temperature superconductivity

15:05-15:40 **A. Finkelstein**, The Weizmann Institute

15:40-16:10 **Coffee Break**

16:10-16:45 **C. Di Castro**, Rome

Critical charge and spin fluctuations in the physics of the cuprate superconductors

16:45-17:10 **S. Reich**, Technion

2D superconductivity in tungsten oxide bronzes

17:10-17:45 **Bourges**

Thursday, May 24

Session G. VORTEX MATTER I

- 08:30-09:05 **A. Tonomura**, Hitachi
Direct observation of vortices in high- T_c superconductors by Lorentz microscopy
- 09:05-09:40 **P. Leiderer**, Konstanz
Magneto-optic investigations of HTSC films
- 09:40-10:15 **S. Gerber**, Tel Aviv University
High field stability and memory of the critical state
- 10:15-10:45 **Coffee Break**
- 10:45-11:20 **D. Giller**, Bar-Ilan University
Transient vortex states
- 11:20-11:55 **Y. Paltiel**, The Weizmann Institute
Dynamic instabilities, memory effects and noise in vortex matter
- 11:55-14:30 **Lunch Break**

Session H. VORTEX MATTER II

- 14:30-15:05 **M. Konczykowski**, Ecole Polytechnique
Phase diagram of vortex matter of layered superconductors in oblique fields
- 15:05-15:40 **B. Horowitz**, Ben Gurion University
Disorder induced phase transitions of flux lattices in layered superconductors
- 15:40-16:10 **Coffee Break**
- 16:10-16:45 **E. Polturak**, The Technion
Spontaneous magnetization at the transition temperature of YBCO
- 16:45-17:20 **C. Joos**, Göttingen
Space resolved study of current transport through grain boundaries and interfaces
- 17:20-17:55 **A. Kapitulnik**, Stanford
Quantum phase fluctuations in HTSC
- 17:55-18:05 **Closing remarks**
- 18:05-21:00 *Beirat meeting II*