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 id 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 id component (tunneling)

17:35-17:50  Y. Dagan, Tel Aviv University
Evidence for id 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 antiferromanets 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 μSR

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


11:55-14:30  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

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. Horovitz, 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