

# M2S-HTSC-VI TECHNICAL PROGRAM

This program is current as of January 2000. Changes will be listed in the final Registration Packets.

Badges are required for admittance to all technical sessions and social events.

## SUNDAY, February 20

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- 9:00-5:00 **Exhibit Installation** *George R. Brown Convention Center, Hall D 3<sup>rd</sup> Level*
- 3:00- on **Hotel Check-In** *Hyatt Regency, Double Tree*
- 11:00- 8:00 **Early Registration** *Hyatt Regency, Exhibits Hall, Lower Level*
- 11:00- 8:00 **Speaker Preparation Room Open** *Redbud (3rd Level)*
- 7:00-9:00 **WELCOME RECEPTION** *Hyatt Regency Hotel, Imperial Ballroom (3rd Level)*  
Hosted by UH Chancellor/President and Mrs. Arthur K. Smith  
Professor and Mrs. C. W. Chu for Conference participants and Houston Consular Corps members

## MONDAY MORNING, February 21 George R. Brown Convention Center

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- 9:00-10:00 **Accompanying Persons Coffee** *Hyatt Regency Hotel, Redbud Room*
- Check hotel information boards for shuttle times from hotels to GRB
- 7:00 **Registration Open** *2<sup>nd</sup> Level*
- 7:00 **Press Room, Poster Set-Up (Hall D) Open** *3<sup>rd</sup> Level*
- 8:00 **Publications Room, Exhibits Open** *3<sup>rd</sup> Level*
- 7:30-8:00 **Session Chair Briefing** *Speaker Preparation Room, Room 306 F*
- 8:00-9:00 **CONTINENTAL BREAKFAST WITH EXHIBITORS** *Hall D*
- 9:00-10:00 OPENING SESSION** *General Assembly Hall A*
- 9:00-9:15 **Greetings & Conference Overview** **C. W. Chu** (TCSUH/U Houston)
- 9:15-9:30 **Special Remarks**
- 9:30-10:00 **Announcements & Presentation of M2S-HTSC-VI Prizes**  
Chairs: **C. W. Chu** (Matthias Prize); **D. Scalapino** (Bardeen Prize); **P. Kes** (Onnes Prize)  
Bernd T. Matthias Prize Lecture Recipient: **M. B. Maple** (U California-San Diego)  
John Bardeen Prize Lecture Recipient: **T. M. Rice** (ETH Zürich)  
H. Kamerlingh Onnes Prize Lecture Recipient: **Z. X. Shen** (Stanford U)
- 10:00-10:30 **Coffee Break** *Prefunction Area*
- 10:30-12:15 **1PLa PLENARY SESSION 1a: THEORY PANEL** *General Assembly Hall A*  
Chairs: **J. R. Schrieffer** (NHMFL, Florida), **T. H. Geballe** (Stanford U)
- 10:30-10:55 **1PLa.1 P. W. Anderson** (Princeton U): RVB Redux: The "Big Tent" Theory of High  $T_c$
- 10:55-11:20 **1PLa.2 R. B. Laughlin** (Stanford U): Quantum Criticality and Cuprate Phenomenology
- 11:20-12:15 **Moderated Panel/Audience Discussion**

# MONDAY AFTERNOON, February 21

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- 12:15-1:45 **1BB Lunch- Brown Bag Lunch-HOT TOPICS** *George Bush Ballroom B*  
Chairs: **D. M. Ginsberg** (U Illinois-Urbana), **K. Kitazawa** (U Tokyo)  
*Note: Pre-purchased brown bag luncheons may be picked up in the prefunction area*
- 1:45-2:30 **1PLb PLENARY SESSION 1b** *General Assembly Hall A*  
Chair: **R. C. Dynes** (U California-San Diego)
- 1:45-2:30 **1PLb.1 K. A. Müller** (U Zürich): Recent Experimental Insights into HTCS Materials
- 2:30 **Coffee Break** *Hall D*  
(Included in Poster Session)
- 2:30-4:30 **1PO POSTER SESSIONS** *Hall D*
- 1PO1** HTS Theory  
**1PO2** Vortex Physics  
**1PO3** Cuprate-Based Materials  
**1PO4** Thin Film and Device Processing  
**1PO5** Bulk Processing  
**1PO6** Wires, Magnets, and Components  
**1PO7** Magnetic and Acoustic Properties
- 4:30-6:30 **CONCURRENT SESSIONS 1**
- 4:30-6:30 **SESSION 1A1 HTS Theory I** *Room 303 A*  
Chairs: **D. Scalapino** (U California-Santa Barbara), **B. Chakraverty** (LEPES/CNRS-Grenoble)
- 4:30-4:50 **1A1.1 S. Maekawa** (IMR/Tohoku U): Are Spin and Charge Really Separated in HTS? – Comparison between Theory and Experiment
- 4:50-5:10 **1A1.2 D. Pines** (U Illinois-Urbana): Quantum Protectorates in the Cuprate Superconductors
- 5:10-5:30 **1A1.3 P. A. Lee** (MIT): Cuprates as Doped Mott Insulators: *d*-wave Superconductivity and Staggered Current Fluctuations
- 5:30-5:50 **1A1.4 C. S. Ting** (TCSUH/U Houston): Understanding HTS Cuprates on the Basis of Phase String Theory of Doped Anti-ferromagnet
- 5:50-6:10 **1A1.5 N. Nagaosa** (U Tokyo): Aspects of Strong Coupling in Gauge Theory of High  $T_c$  Superconductors
- 6:10-6:30 Discussion
- 4:30-6:30 **SESSION 1B1 Josephson Coupling** *General Assembly Hall A*  
Chairs: **J. Clem** (Ames Lab/Iowa State University), **P. Müller** (U Erlangen)
- 4:30-4:50 **1B1.1 M. Tachiki** (NRIM, Tsukuba): Current Understanding of the Josephson Plasma Theory and Experiment in HTSC
- 4:50-5:10 **1B1.2 L. Bulaevskii** (Los Alamos Nat'l. Lab): Interlayer Transport of Quasiparticles in the Vortex State of Highly Anisotropic *d*-wave Superconductors
- 5:10-5:30 **1B1.3 Y. Latychev** (Russian Acad. of Sciences, Inst. of Radio-Eng. & Electr.): Interlayer Tunneling of Quasiparticles and Cooper Pairs in Bi-2212 Single Crystal Whiskers
- 5:30-5:50 **1B1.4 A. Koshelev** (Argonne Nat'l. Lab): Plasma Resonance at Low Magnetic Fields as a Probe of Vortex Line Meandering in Layered Superconductors
- 5:50-6:10 **1B1.5 T. Tamegai** (U. Tokyo): Josephson Plasma Resonance in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+y}$  with Mesa Array
- 6:10-6:30 **1B1.6 N. Morozov** (Los Alamos Nat'l. Lab): *c*-Axis Tunneling in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$  in Magnetic Fields up to 60T

# MONDAY AFTERNOON, February 21 (continued)

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## 4:30-6:30 SESSION 1C1 Thin Film and Device Processing Room 302 A

Chairs: T. Venkatesan (U Maryland), C. Y. Huang (Taiwan U)

- 4:30-4:50 1C1.1 I. Bozovic (Oxxel GmbH): Atomic-Layer Engineering of High-Temperature Superconductors  
4:50-5:10 1C1.2 T. Claeson (Chalmers U): Intrinsic Josephson Junctions for Studies of High- $T_c$  Superconductors  
5:10-5:30 1C1.3 T. Kawai (ISIR-Sanken, Osaka U): Transition Metal Oxide Artificial Lattices: Advanced Processing, STM/STS and Tunneling Junctions  
5:30-5:50 1C1.4 J.-P. Locquet (IBM Zürich): Chemical Block Engineering of Complex Oxide Thin Films  
5:50-6:10 1C1.5 J. Talvacchio (Northrup-Grumman): Influence of Materials Selection on the Properties of SNS Junctions  
6:10-6:30 1C1.6 D. Face (DuPont Superconductivity): HTS Thin Films for rf and Microwave Applications

## 4:30-6:30 SESSION 1D1 Bulk Processing Room 301 F

Chairs: M. Strasik (Boeing), P. J. Majewski (Max-Planck-Inst.)

- 4:30-4:50 1D1.1 M. Murakami (SRL/ISTEC): Recent Progress in Processing and Applications of Bulk High Temperature Superconductors  
4:50-5:10 1D1.2 R. Tournier (CNRS, Grenoble): Texturing of Bulk Bi2212/MgO by Melt Processing in a Magnetic Field and Effect of Post-annealing on the Critical Current Density  
5:10-5:30 1D1.3 G. Krabbes (IFW, Dresden): YBCO- Monoliths with Peak Effect and Trapped Fields More than 14 T  
5:30-5:50 1D1.4 W. Lo (TCSUH/U Houston): Growth and Properties of  $Nd_{1-x}Ba_xCu_3O_y$  Large Grains for Device Applications  
5:50-6:10 1D1.5 D. Cardwell (U Cambridge): Fabrication of Large Grain Nd-Ba-Cu-O by Seed Melt Growth  
6:10-6:30 1D1.6 T. Puig (U Barcelona): Competition Effect Between Random Quenched and Linearly Correlated Disorders in MTG-YBCO

## 4:30-6:30 SESSION 1E1 Pseudo Gap and Symmetry Room 301 D

Chairs: C. C. Tsuei (IBM Yorktown), K. Maki (U Southern California)

- 4:30-4:50 1E1.1 C.-R. Hu (Texas A&M U): Midgap States Provide Many Stringent Tests on the Pairing Symmetry of High-Temperature and Other Superconductors  
4:50-5:10 1E1.2 A. V. Balatsky (Los Alamos Nat'l. Lab): Marginal Stability of High- $T_c$  Superconductors and Time Reversal Symmetry Violation  
5:10-5:30 1E1.3 W. Y. Liang (U Cambridge): Normal State Gap and High Temperature Superconductivity  
5:30-5:45 1E1.4 J. Orenstein (U California-Berkeley): Detection of Phase Fluctuations in BSCCO  
5:45-6:00 1E1.5 M. Sadovkii (Inst. Electrophysics, Russian Acad. Sci.): Models of the Pseudogap State in Cuprates  
6:00-6:15 1E1.6 T. Takahashi (IMR/Tohoku U): Small and Large Pseudogaps in High- $T_c$  Superconductors Observed by Ultra High-resolution Photoemission Spectroscopy  
6:15-6:30 1E1.7 G. Q. Zheng (Osaka U): Responses of the Pseudo Gap and  $d$ -wave Superconductivity to High Magnetic Fields in Underdoped and Overdoped High- $T_c$  Superconductors:  $^{63}\text{Cu}$  NMR Studies

## 8:00-10:30 1SS EVENING SPECIAL SYMPOSIUM Hyatt Regency Hotel, Imperial Ballroom (3rd Level)

Sponsors: Laboratory for Advanced Materials, Stanford University; Texas Center for Superconductivity, University of Houston

### "The Search for New Materials: A Symposium in Honor of T. H. Geballe"

Chairs: M. R. Beasley (Stanford U), C. W. Chu (U Houston/TCSUH)

- 8:00-8:10 1SS.1 M. R. Beasley (Stanford U) and C. W. Chu (U Houston/TCSUH): Overview and Comments  
8:10-8:20 1SS.2 P. Anderson (Princeton U)  
8:20-8:30 1SS.3 J. M. Rowell (Northwestern U): A-15 Superconductors  
8:30-8:40 1SS.4 F. di Salvo (Cornell U): Layered Superconductors  
8:40-8:50 1SS.5 O. Fischer (U Geneva): Chevrels  
8:50-9:00 1SS.6 R. Greene (U Maryland): Organic Metals  
9:00-9:10 1SS.7 Z. Fisk (NHMFL, Florida): Heavy Fermions  
9:10-9:20 Questions  
9:20-9:50 1SS.8 T. H. Geballe (Stanford U): Future Search for New Materials  
9:50-10:30 Light Dessert Reception (Cash bar)  
Toastmasters: M. Marezio (MASPEC/CNR, Parma), A. de Lozanne (U Texas-Austin)

- 7:00 Registration *2<sup>nd</sup> Level*  
 7:00 Poster Set-Up Open *3<sup>rd</sup> Level-Hall D*  
 7:30 Press Room Open *3<sup>rd</sup> Level*  
 8:00 Publications Room Open *3<sup>rd</sup> Level*  
 9:00 Exhibits Open *3<sup>rd</sup> Level-Hall D*
- 7:45-8:15 **Session Chair Briefing** *Speaker Preparation Room, Room 306 F*
- 8:30-9:15 **2PL PLENARY SESSION 2** *General Assembly Hall A*  
 Chair: **Z. X. Zhao** (Nat'l. Superconductivity Lab, Chinese Acad. Sci.)  
**2PL.1 K. Kitazawa** (U Tokyo): Physical Properties of HTS- The Mysterious Goddess
- 9:15-9:45 **2PR JOHN BARDEEN PRIZE LECTURE** *General Assembly Hall A*  
 Chair: **D. Scalapino** (U California-Santa Barbara)  
**2PR.1 T. M. Rice** (ETH Zürich): Unconventional Superconductors: Contrasting Cuprates and Ruthenates
- 9:45-10:15 **Coffee Break** *Prefunction Area*
- 10:15-12:30 **CONCURRENT SESSIONS 2**
- 10:15-12:30 **SESSION 2A2 HTS Theory II** *Room 303 A*  
 Chairs: **S. Maekawa** (IMR/Tohoku U), **C. Di Castro** (U Rome)
- 10:15-10:35 **2A2.1 B. K. Chakraverty** (CNRS-Grenoble): Quantum Phase Fluctuation in High  $T_c$  Superconductors  
 10:35-10:55 **2A2.2 E. Schachinger** (Tech. U Graz): Coupling to Spin Excitations Determined from Optical Data  
 10:55-11:15 **2A2.3 K. H. Bennemann** (Freie Univ. Berlin): Theoretical Study of Underdoped Cuprates: Cooper-Pair Phase Fluctuations  
 11:15-11:35 **2A2.4 T. Schneider** (U Zurich): D-XY Critical Behavior of Cuprate Superconductors  
 11:35-11:55 **2A2.5 J. F. Annett** (U of Bristol): Condensate Gap Symmetry vs. Pseudogap Symmetry  
 11:55-12:30 Discussion
- 10:15-12:30 **SESSION 2B2 Vortex Phase Diagram** *General Assembly Hall A*  
 Chairs: **G. Blatter** (ETH Zürich), **V. Vinokur** (Argonne Nat'l. Lab)
- 10:15-10:35 **2B2.1 C. Marcenat** (CEA/Grenoble): The Thermodynamic Phase Diagram of Vortex Matter in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-d}$   
 10:35-10:55 **2B2.2 W. K. Kwok** (Argonne Nat'l. Lab): Effect of Defects on the Critical Points in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-d}$   
 10:55-11:15 **2B2.3 T. Nishizaki** (IMR/Tohoku U): New Equilibrium Phase Diagram of  $\text{YBa}_2\text{Cu}_3\text{O}_y$  Under High Magnetic Fields  
 11:15-11:35 **2B2.4 A. Sudboe** (Norwegian U. of S&T): Dual Symmetry Breaking and Vortex-loop Unbinding in 3D Type-II Superconductors  
 11:35-11:55 **2B2.5 X. Hu** (NRIM/Tsukuba): Critical Anisotropy in Josephson-Vortex Systems Induced by Magnetic Fields along ab Plane of High- $T_c$  Superconductors  
 11:55-12:15 **2B2.6 K. Kishio** (U Tokyo): The Universal Scaling in Magnetic Phase Diagram of HTSC  
 12:15-12:30 **2B2.7 V. G. Kogan** (Ames Lab): Vortex Lattice Transitions in Tetragonal Crystals
- 10:15-12:35 **SESSION 2C2 Cuprate-Based Materials** *Room 302 A*  
 Chairs: **M. Alario-Franco** (U Complutense de Madrid), **M. B. Maple** (U California-San Diego)
- 10:15-10:35 **2C2.1 Z. X. Zhao** (Nat'l Lab for Supercond., Chinese Acad. Sci.): High Pressure Synthesis of the Pr-Cuprate Superconductors  
 10:35-10:55 **2C2.2 K. R. Poeppelmeier**: High Pressure Synthesis of Copper-rich Perovskites from Single Phase Precursors  
 10:55-11:15 **2C2.3 B. Mercey** (CRISMAT/ISMRA/CNRS-Caen): New Tailored Cuprates Grown by Pulsed Laser Deposition  
 11:15-11:35 **2C2.4 C. C. Almasan** (Kent State U): Experimental Investigations of Dynamics of Flux Creep in Cuprates  
 11:35-11:55 **2C2.5 W. H. Fietz** (ITP/FZK-Karlsruhe): Joint Features of Pressure Effect and Specific Heat of  $\text{RBa}_2\text{Cu}_3\text{O}_x$  at Distinct  $h_n$  Values  
 11:55-12:15 **2C2.6 H. Schmidt** (Gergische U. Wuppertal): Superconducting Gap Ds versus the Number of  $\text{CuO}_2$  Layers  $n$  in  $\text{Bi}_2\text{Sr}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_{2n+4+\delta}$ ,  $\text{Tl}_2\text{Ba}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_{2n+4+\delta}$ , and  $\text{HgBa}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_{2n+2+\delta}$   
 12:15-12:35 **2C2.7 R. J. Cava** (Princeton U): Magnets, Metals and Mischief in Cobalt Analogs of the Superconducting Cuprates

## TUESDAY MORNING, FEBRUARY 22 (continued)

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- 10:15-12:30 **SESSION 2D2 Wires, Magnets and Components** *Room 301 F*  
Chairs: **U. Balachandran** (Argonne Nat'l Lab), **H. Fujimoto** (Railway Tec. Res. Inst.)
- 10:15-10:35 **2D2.1 R. Flukiger** (U Geneva): Phase Stability and Phase Formation in Bi Based High  $T_c$  Superconductors  
10:35-10:55 **2D2.2 R. Nicolsky** (LASUP, Centro de Tecnologia): Development of Hybrid Bearing System with Thrust Superconducting Magnetic Bearing and Radial Active Electromagnetic Bearing  
10:55-11:15 **2D2.3 L. Martini** (ENEL Ricerca): ASM Multilayered Bi-2223 Conductors for 13,000 A Current Leads for CERN  
11:15-11:35 **2D2.4 W. Gawalek** (IPHT-Jena): Massive HTS Material in Rotating Electric Machines  
11:35-11:55 **2D2.5 M. Strasik** (Boeing): Flywheel  
11:55-12:15 **2D2.6 W. K. Chu** (TCSUH/U Houston): High Temperature Superconductor Levitation Bearings for Space Application  
12:15-12:30 **2D2.7 R. Radebaugh** (NIST/Boulder): Progress in Cryocoolers for Superconductor Applications
- 10:15-12:35 **SESSION 2E2 Pseudo Gap I** *Room 301 D*  
Chairs: **N. P. Ong** (Princeton), **S. Tajima** (ISTEC)
- 10:15-10:35 **2E2.1 H. Yasuoka** (Japan Atomic Energy Res. Inst.): Discovery of the Spin Gap and its Development  
10:35-10:55 **2E2.2 S. -I. Uchida** (U Tokyo): Pseudogap vs. Stripe Fluctuations in High- $T_c$  Cuprates  
10:55-11:15 **2E2.3 M. Randeria** (Tata Inst. Fund. Res.): Underdoped Cuprates Above and Below  $T_c$   
11:15-11:35 **2E2.4 J. Loram** (U Cambridge): The Condensation Energy and Pseudogap Energy Scale of Bi-2212 from the Electronic Specific Heat  
11:35-11:55 **2E2.5 D. Basov** (U California-San Diego): Unconventional Energetics of the Pseudogap State and of Superconducting State in High  $T_c$   
11:55-12:15 **2E2.6 N. Miyakawa** (Sci. U of Tokyo): Superconducting Gap and Pseudogap from Tunneling Conductance on Bi2212 with Various Oxygen Concentration  
12:15-12:35 **2E2.7 R. A. Klemm** (Argonne National Lab): Origin of the Pseudogap in High Temperature Superconductors

## TUESDAY AFTERNOON, FEBRUARY 22

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- 12:30-1:30 **SESSION 2BB Lunch- Theory "POINT-COUNTERPOINT" Brown Bag** *George Bush Ballroom B*  
Chairs: **M. L. Cohen** (U California-Berkeley), **J. Ruvalds** (U Virginia)  
*Note: Discussion will take place for 45 minutes. Pre-purchased brown bag lunches may be picked up in the Ballroom Prefunction Area*
- 1:30-3:30 **2PO POSTER SESSIONS** *Hall D*
- 2PO1** Vortex Physics  
**2PO2** Pseudo Gap  
**2PO3** Pairing Symmetry  
**2PO4** Grain Boundary and Critical Current  
**2PO5** Raman and IR Spectroscopy  
**2PO6** Stripe Phase  
**2PO7** Conductors and Coated Conductors  
**2PO8** System Applications  
**2PO9** Electrical and Thermal Properties
- 2:30 **Coffee Break** *Hall D*  
(Included in Poster Session)

## TUESDAY AFTERNOON, FEBRUARY 22 (continued)

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### 3:30-6:00 CONCURRENT SESSIONS 3

#### 3:30-6:00 SESSION 2A3 HTS Theory III *Room 303 A*

Chairs: P. A. Lee (MIT), J. Carbotte (McMaster U)

- 3:30-3:50 2A3.1 S. C. Zhang (Stanford U): SO(5) Theory of High  $T_c$  Superconductivity  
3:50-4:10 2A3.2 M. P. A. Fisher (U California-Santa Barbara):  $Z_2$  Gauge Theory and Confinement Criticality  
4:10-4:30 2A3.3 A. Abrikosov (Argonne Nat'l. Lab): Theory of High- $T_c$  Superconducting Cuprates Based on Experimental Evidence  
4:30-4:50 2A3.4 V. Z. Kresin (Lawrence Berkeley Lab): Intrinsic Inhomogeneity and Dynamic Screening in Layered Superconductors; Anomalous Diamagnetism Above Resistive  $T_c$   
4:50-5:10 2A3.5 E. G. Maksimov (Lebedev Physical Inst.): Relaxation Processes and Pairing in High- $T_c$  Systems  
5:10-5:30 2A3.6 A. Alexandrov (Loughbrough U): Unified Theory of Colossal Magnetoresistance in Manganites and High-Temperature Superconductivity in Cuprates  
5:30-5:50 2A3.7 M. Kulić (U Bayreuth): The Electron-Phonon Interaction Renormalized by Strong Correlations: The Way to HTS  
5:50-6:00 Discussion

#### 3:30-6:00 SESSION 2B3 Raman and IR Spectroscopy *General Assembly Hall A*

Chairs: A. Bansil (Northeastern U), C. Bernhard (Max-Planck Inst.-Stuttgart)

- 3:30-3:50 2B3.1 M. Klein (U Illinois-Urbana): Systematics of Raman Results on the Superconducting Gap: Interaction Effects  
3:50-4:10 2B3.2 M. Nohara (U Tokyo): Impurity-Induced Gap Renormalized in Anisotropic Superconductors: Mixed-State Specific Heat of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$  and  $\text{Y}(\text{Ni}_{1-x}\text{Pt}_x)_2\text{B}_2\text{C}$   
4:10-4:30 2B3.3 H.-L. Liu (Nat'l. Taiwan Normal U): Electronic Raman Scattering in Bi-2212 Excited with c-Axis Polarized Light  
4:30-4:50 2B3.4 E. Liarokapis (Nat'l. Tech. U Athens): Raman Studies of Local Structure, Superstructure, and Phases in High Temperature Superconductors  
4:50-5:05 2B3.5 G. Blumberg (Bell Labs/Lucent Technologies): Collective Excitations in Two-dimensional and Quasi-One-dimensional High  $T_c$  Cuprate Superconductors by Electronic Raman Spectroscopy  
5:05-5:25 2B3.6 C. Kendziora (Naval Research Lab): Polarized Electronic Raman Scattering in High  $T_c$  Superconductors  
5:25-5:45 2B3.7 T. Timusk (McMaster U): The Pseudogap in the IR Scattering Rate of HTSC  
5:45-6:00 2B3.8 D. B. Tanner (U Florida): Superfluid and Normal-fluid Densities in the High- $T_c$  Superconductors

#### 3:30-6:00 SESSION 2C3 Thermal Properties *Room 302 A*

Chairs: D. Gubser (Naval Research Lab), J. L. Tholence (CNRS)

- 3:30-3:50 2C3.1 N. E. Phillips (U California-Berkeley): Specific Heat of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-d}$ : Paramagnetic Centers; Evidence for  $d$ -Wave Pairing  
3:50-4:10 2C3.2 L. Taillefer (U Toronto): Low-Energy Quasiparticles in Cuprate Superconductors  
4:10-4:30 2C3.3 K. Behnia (U Paris): Effect of Controlled Disorder on Thermal Conductivity of Bi2212

#### & SESSION 2CL3 Late News

- 4:30-4:45 2CL3.1 V. V. Moshchalkov (Catholic U/Leuven): Stripes and Dimensional Crossovers in High  $T_c$  Cuprates  
4:45-5:00 2CL3.2 A. K. Bansil (Northeastern U): Importance of Matrix Elements in the ARPES Spectra of BISCO  
5:00-5:15 2CL3.3 S. Sridhar (Northeastern U): Microwave Absorption Peaks: Signatures of Charge Dynamics in Cuprate Superconductors  
5:15-5:30 2CL3.4 Y. W. Park (Seoul Natl. U): New Reentrant Superconducting-Normal Transition in SrKBiO Superconductor: Magnetotransport and Magnetization Study  
5:30-5:45 2CL3.5 C. Niedermayer (U Konstanz): Penetration Depth Studies With Slow Muons  
5:45-6:00 2CL3.6 G. Jakob (U Mainz): Importance of the Crossover-Current Density for a Vortex-Glass Analysis

## TUESDAY AFTERNOON, FEBRUARY 22 (continued)

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- 3:30-6:00**    **SESSION 2D3 Conductors and Coated Conductors** *Room 301 F*  
Chairs: **D. Peterson** (Los Alamos Nat'l. Lab), **M. Soto** (ONR)
- 3:30-3:50    **2D3.1 S. Foltyn** (Los Alamos Nat'l Lab): Development of Meter-Long YBCO Coated Conductors Produced by Ion Beam Assisted Deposition and Pulsed Laser Deposition
- 3:50-4:10    **2D3.2 D. Christen** (Oak Ridge National Lab): Progress in the Fabrication of High J<sub>c</sub> YBCO Coated Conductors on Rolling Assisted Biaxially Textured Substrates (RABITS)
- 4:10-4:30    **2D3.3 A. Ignatiev** (TCSUH/U Houston): Coated Conductor Development by Photo-Assisted MOCVD Growth of YBCO Thick Films and Buffer Layers
- 4:30-4:50    **2D3.4 V. Selvamanickam** (Intermagetics General Corp.): YBCO Coated Conductor Development at IGC
- 4:50-5:10    **2D3.5 R. L. Meng** (TCSUH/U Houston): Tape Processing of HBCCO, BSOCO, and YBCO Thick Films on Metallic Substrates with High J<sub>c</sub> by the Spray/Press Technique
- 5:10-5:30    **2D3.6 S. Annavarapu** (American Superconductor Corp.): Viable YBCO Coated Conductor Technology
- 5:30-5:50    **2D3.7 Y. Nakamura** (SRL/ISTEC): LPE Process Application to RE123 Coated Conductor
- 3:30-6:00**    **SESSION 2E3 Stripe Phase** *Room 301 D*  
Chairs: **R. Greene** (U of Maryland), **C. Castellani** (U. Rome)
- 3:30-4:00    **2E3.1 V. J. Emery** (Brookhaven Nat'l Lab): Electronic Structure of Doped Insulators and High-T<sub>c</sub> Superconductivity
- 4:00-4:20    **2E3.2 J. Tranquada** (Brookhaven National Lab): Stripes and Superconductivity in La<sub>2-x</sub>Sr<sub>x</sub>CuO<sub>4</sub>
- 4:20-4:40    **2E3.3 N. P. Ong** (Princeton): Transport Properties in the Striped Phase in Underdoped Cuprates
- 4:40-5:00    **2E3.4 C. Di Castro** (U Rome): The Physics of the Stripe-Quantum-Critical-Point in the Superconducting Cuprates
- 5:00-5:20    **2E3.5 Y. S. Lee** (MIT/NIST): Neutron Scattering Study of Incommensurate Magnetic Order in Superconducting La<sub>2</sub>CuO<sub>4+y</sub>
- 5:20-5:40    **2E3.6 A. Bianconi** (U Rome): Stripes, Superconductivity and T<sub>c</sub> Amplification
- 5:40-6:00    **2E3.7 S. Tajima** (ISTEC): Optical Responses of the Stripe Phase in High T<sub>c</sub> Cuprates
- 6:45-7:45    **STUDENT RECEPTION** *Double Tree Hotel, Granger Ballroom*  
Sponsors: The University of Texas at Austin, Department of Physics; University of Houston Office of Research; University of Houston College of Natural Sciences & Mathematics

## WEDNESDAY MORNING, FEBRUARY 23 George R. Brown Convention Center

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- 7:00        Registration Open
- 7:30        Press Room Open
- 8:00        Publications Room Open
- 7:45-8:15**    **Session Chair Briefing** *Speaker Preparation Room, Room 306 F*
- 8:30-9:00**    **3PL PLENARY SESSION 3** *General Assembly Hall A*  
Chair: **K. A. Müller** (U of Zurich)
- 3PL.1 C. W. Chu** (TCSUH/U Houston): HTS Materials: Present Status and Future Challenges
- 9:00-9:30**    **3PR BERND T. MATTHIAS PRIZE LECTURE** *General Assembly Hall A*  
Chair: **C. W. Chu** (TCSUH/U Houston)
- 9:00-9:30    **3PR.1 M. B. Maple** (U California-San Diego): Three Decades of Progress on Superconductivity and Magnetism in Novel Materials
- 9:30-10:00    **Coffee Break** *Prefunction Area*

## WEDNESDAY MORNING, FEBRUARY 23 (continued)

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### 10:00-12:00 CONCURRENT SESSIONS 4

#### 10:00-12:00 SESSION 3A4 Pairing Symmetry *Room 303 A*

Chairs: M. Sigrist (Kyoto U), M. V. Klein (U Illinois-Urbana)

- 10:00-10:20 3A4.1 J. A. Sauls (Northwestern U): The Sign of d-wave Pairing: Current Anomalies in High  $T_c$  Superconductors  
10:20-10:40 3A4.2 C. C. Tsuei (IBM Yorktown): *d*-wave Pairing Symmetry and its Implications  
10:40-11:00 3A4.3 G. Deutscher (Tel Aviv U): Large Field Induced Tunneling Sub-Gap in Oriented YBCO Films: Indication for a  $d_{x^2-y^2} + id_{xy}$  Order Parameter  
11:00-11:20 3A4.4 L. Greene (U. Illinois-Urbana): Tunneling Spectroscopy of the Andreev Bound State of YBCO: Measurements of Broken Time-Reversal Symmetry, Anisotropy and Quasiparticle Scattering  
11:20-11:40 3A4.5 N.-C. Yeh (CalTech): Directional Tunneling Spectroscopy Studies of the Doping-Level and Temperature Dependence of Pairing Symmetry in Superconducting Cuprates  
11:40-12:00 3A4.6 D. F. Agterberg (NHFML, Florida): Vortex Lattice Structures and Pairing Symmetry in  $Sr_2RuO_4$

#### 10:00-12:00 SESSION 3B4 Vortex Pinning *General Assembly Hall A*

Chairs: L. Krusin-Elbaum (IBM), V. V. Moshchalkov (Katholiek U Leuven)

- 10:00-10:20 3B4.1 Y. Bruynseraede (Katholiek U Leuven): Vortex Confinement by Regular Pinning Arrays  
10:20-10:40 3B4.2 I. K. Schuller (U California-San Diego): Flux Pinning in a Superconductor by Arrays of Submicron Magnetic Dots  
10:40-11:00 3B4.3 F. de la Cruz (Centro Atomico Bariloche): Static and Dynamic Properties of Vortex Structures under the Influence of Weak Periodic Pinning Potentials  
11:00-11:20 3B4.4 B. Dam (Vrije U): Natural Strong Pinning of Vortices in High- $T_c$  Films  
11:20-11:40 3B4.5 S. Grigera (Centro Atomico Bariloche-Argentina): Twin Boundaries and the Bose-Glass Phase  
11:40-12:00 3B4.6 D. J. Bishop (Bell Labs/Lucent Technologies): Silicon Micromachines for Science and Technology

#### 10:00-12:00 SESSION 3C4 Grain Boundary and Critical Current *Room 302 A*

Chairs: H. Weber (Atomic Inst. of Austrian Universities), W. Lo (TCSUH/U Houston)

- 10:00-10:20 3C4.1 D. Larbalestier (U Wisconsin): The Properties of Low Angle Grain Boundaries in High Temperature Superconductors  
10:20-10:40 3C4.2 J. Mannhart (Augsburg U): Doping Induced Enhancement of the Critical Currents of Grain Boundaries in High- $T_c$  Superconductors  
10:40-11:00 3C4.3 K. Gray (Argonne Nat'l. Lab): Grain Boundary Dissipation in High- $T_c$  Superconductors  
11:00-11:15 3C4.4 K. Salama (TCSUH/U Houston): Grain Boundaries in Bulk YBCO  
11:15-11:30 3C4.5 Q. Li (Brookhaven National Lab): Electromagnetic and Microstructural Properties of Bulk Bicrystal Grain Boundaries in High  $T_c$  Superconductors  
11:30-11:45 3C4.6 S. X. Dou (U Wollongong): Uranium Doping and Thermal Neutron Irradiation to Enhance Flux Pinning with Reduced Radioactivity in Bi-2223 Tapes  
11:45-12:00 3C4.7 R. Weinstein (TCSUH/U Houston): Pinning Centers From Uranium Fission in Various HTS

#### 10:00-12:05 SESSION 3D4 Applications *Room 301 F*

Chairs: C. Platt (ATP/NIST), P. M. Grant (EPRI)

- 10:00-10:20 3D4.1 J. G. Daley (DOE): HTS Power Technologies: Nanometers and Megawatts  
10:20-10:40 3D4.2 Y. Shiohara (ISTEC): R & D of Coated Conductor in Japan  
10:40-10:55 3D4.3 D. U. Gubser (Naval Res. Lab): Naval Applications of Superconducting Magnet Systems  
10:55-11:10 3D4.4 H. Fujimoto (Railway Tec. Res. Inst.): Preliminary Study of Superconducting Bulk Magnets for Maglev  
11:10-11:30 3D4.5 H. Freyhardt (U Gottengen): HTS Activities in Europe: Perspectives for Bulk and Tape Conductors  
11:30-11:50 3D4.6 J. M. Rowell (Northwestern): Some Requirements of the Petaflop Computer  
11:50-12:05 3D4.7 S. Hornfeldt (ABB Res. Corp.): HTS in Electric Power Applications Transformers



## WEDNESDAY MORNING, FEBRUARY 23 (continued)

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10:00-12:00 **SESSION 3E4 Ladder Cuprates** *Room 301 D*  
Chair: **T. Tohyama** (Tohoku U)

- 10:00-10:20 **3E4.1 M. Takano** (Kyoto Univ.): Cupric Spin Ladder Oxides: Synthesis, Spin Gap, Impurity Effects  
10:20-10:40 **3E4.2 J. Akimitsu** (Aoyama Gakuin U): Superconductivity, Spin Liquid State and Antiferromagnetism in the Spin Ladder Compound  $(\text{Sr,Ca})_{14}\text{Cu}_{24}\text{O}_{41}$   
10:40-11:00 **3E4.3 L. Degiorgi** (ETH Zürich): Dynamics in the Low-Dimensional Ladder Cuprates  $\text{Sr}_{14-x}\text{Ca}_x\text{Cu}_{24}\text{O}_{41}$  ( $x=0, 5$  and  $12$ )  
11:00-11:20 **3E4.4 H. Eisaki** (Univ. of Tokyo/Stanford U): Electronic Phase Diagram of the 2-leg Ladder Compound  $\text{Sr}_{14-x}\text{Ca}_x\text{Cu}_{24}\text{O}_{41}$  as Investigated by the Transport Property Measurements  
11:20-11:40 **3E4.5 N. Nücker** (INFP/Karlsruhe): X-Ray Absorption Spectroscopy of  $(\text{Sr,Ca,Y,La})_{14}\text{Cu}_{24}\text{O}_{41}$  Ladder Compounds  
11:40-12:00 **3E4.6 D. J. Scalapino** (U California-Santa Barbara): n-leg Ladders and the High  $T_c$  Problem

## WEDNESDAY AFTERNOON, FEBRUARY 23

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### OPTIONAL AFTERNOON TOURS

NOTE: All participants must have ticket and wear conference badge. Guides will meet participants in the hotel lobby. Look for Tour Signs.

- 12:30 Departure (Hyatt Regency): **OT1 Space Center Houston** (sack lunch included) (12:30-6:00)  
1:00 Departure (Hyatt Regency): **OT2 Museum of Fine Arts & Sculpture Garden** (1:00-5:00)  
2:00 Departure (Hyatt Regency): **OT3 de Menil Museum Collection & Byzantine Fresco Chapel** (2:00-5:30)  
1:00 Departure (Hyatt Regency): **OT4 Bayou Bend Collection and Gardens** (1:00-4:30)  
2:00 Departure (Double Tree): **OT6 Discover Houston Guided Tunnel Walk** (2:00-5:00)  
1:30 Departure (Hyatt Regency): **OT7 Galleria I, II & III Shopping/Entertainment** (1:30-5:30)

### DINNER BUFFET, HOUSTON MUSEUM OF NATURAL SCIENCES

7:00 Departure (Hyatt and Double Tree). All participants must have ticket and wear conference badge. Buses will return to hotels at 10:30 p.m. (An early bus will be provided at 9:30 for those wishing to return to the hotels.)

## THURSDAY MORNING, FEBRUARY 24 George R. Brown Convention Center

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- 7:00 Registration Open *2<sup>nd</sup> Level*  
7:00 Poster Set-Up Open *3<sup>rd</sup> Level*  
7:00 Press Room Open *3<sup>rd</sup> Level*  
8:00 Publications Room *3<sup>rd</sup> Level*  
9:00 Exhibits Open *3<sup>rd</sup> Level - Hall D*

7:45-8:15 **Session Chair Meeting** *Speaker Preparation Room, Room 306 F*

8:30-9:15 **4PL PLENARY SESSION 4** *General Assembly Hall A*  
Chair: **W. K. Chu** (TCSUH/U Houston)

**4PL.1 S. Tanaka** (ISTEC): Status and Future Perspectives of HTS Applications

9:15-9:45 **4PR H. KAMERLINGH ONNES PRIZE LECTURE** *General Assembly Hall A*  
Chair: **P. H. Kes** (Leiden U)

**4PR.1 Z. X. Shen** (Stanford U): Recent Photoemission Data from Cuprate Superconductors

9:45-10:00 **Coffee Break** *Prefunction Area*

## THURSDAY MORNING, FEBRUARY 24 (continued)

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### 10:00-12:15 CONCURRENT SESSIONS 5

#### 10:00-12:15 SESSION 4A5 ARPES and Fermi Surface of HTSs *Room 303 A*

Chairs: P. W. Anderson (Princeton U), N. Nücker (Karlsruhe)

- 10:00-10:20 4A5.2 M. Norman (Argonne Nat'l Lab): Photoemission and the Origin of High Temperature Superconductivity  
10:20-10:40 4A5.3 A. Fujimori (U Tokyo): Fermi Surface, Pseudogap and Superconducting Gap in LSCO  
10:40-11:00 4A5.4 N. L. Saini (U Rome): On the Topological Features at the Fermi Surface of Bi2212 System Revealed by Angle Scanning Photoemission  
11:00-11:20 4A5.5 J. C. Campuzano (U Illinois-Chicago): The Fermi Surface and Its Excitations in the High Temperature Superconductors  
11:20-11:40 4A5.6 J. H. Ranninger (CRTBT-CNRS, Grenoble): Theory of Normal-State Single Particle and Transport Properties  
11:40-12:00 4A5.7 D. Dessau (U Colorado): A Re-examination of the Electronic Structure and Fermi Surface Topology of BSCCO  
12:00-12:15 4A5.8 P. Armitage (Stanford U): Electronic Structure of  $\text{Nd}_{1.85}\text{Ce}_{0.15}\text{CuO}_4$ : Evidence for Disparity between Hole and Electron Doped Cuprate Superconductors

#### 10:00-12:15 SESSION 4B5 Imaging Vortex Behavior *General Assembly Hall A*

Chairs: A. de Lozanne (U Texas-Austin), I. Schuller (U California-San Diego)

- 10:00-10:20 4B5.1 O. Fischer (Geneva): Vortex Cores in Cuprates Observed by STS  
10:20-10:40 4B5.2 J. C. S. Davis (UC Berkeley): STM Study of Effects on Superconductivity of Individual Zinc Impurity Atoms in BSCCO  
10:40-11:00 4B5.3 P. H. Kes (Leiden U): Coherent and Incoherent Vortex Motion  
11:00-11:20 4B5.4 K. A. Moler (Stanford U): Images of Interlayer Josephson Vortices in Single-Layer Cuprates  
11:20-11:40 4B5.5 S. J. Bending (U Bath): Scanning Hall Probe Microscopy of Nanostructured Superconductors  
11:40-12:00 4B5.6 E. Zeldov (Weizmann Institute): Magneto-Optical Visualization of the Vortex-Lattice Melting Transition in Presence of Disorder  
12:00-12:15 4B5.7 Y. Yeshurun (Bar-Ilan U): Study of Formation of the Quasi-Ordered Vortex Phase in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+d}$  Using High-Temporal Resolution Magneto-Optical System

#### 10:00-12:20 SESSION 4C5 Substitution Effect on HTS *Room 302 A*

Chairs: J. D. Jorgensen (Argonne National Lab), R. J. Cava (Princeton)

- 10:00-10:20 4C5.1 J. C. Phillips (ret., Bell Labs/Lucent Tech.): Nanodomains, Dopant Siting, Ideal Phase Diagram, and Filamentary Model of HTS  
10:20-10:40 4C5.2 M. Marezio (MASPEC-CNR): Mechanical Against Chemical Pressure in High  $T_c$  Cuprates  
10:40-11:00 4C5.3 O. Rapp (Kungliga Tekniska Hogskolan): Charge Neutral Dopings in 123 Compounds  
11:00-11:20 4C5.4 Y. Eckstein (Technion): A Tetragonal Family of 1-2-3 Superconductors  
11:20-11:40 4C5.5 S.-I. Lee (Pohang U Sci. & Tech.): Superconducting and Magnetic Properties of Hg-1234, Cu-1234 and BC-1223 Superconductors with  $T_c$  above 115K  
11:40-12:00 4C5.6 R.-S. Liu (Nat'l Taiwan U): Substitution Effect on  $\text{Bi}_2\text{Sr}_2(\text{Ca}_{1-x}\text{Y}_x)\text{Cu}_2\text{O}_{8+d}$  Studied by X-ray Absorption Spectroscopy  
12:00-12:20 4C5.7 B. J. Suh (Iowa State U):  $^{139}\text{La}$  and  $^{63}\text{Cu}$  NQR in Zn-doped Lanthanum Cuprate

#### 10:00-12:20 SESSION 4D5 Superconducting Electronics *Room 301 F*

Chairs: H. Weinstock (AFOSR), D. Oates (MIT Lincoln Lab)

- 10:00-10:20 4D5.1 J. Clarke (U California-Berkeley): High- $T_c$  SQUIDS: Status and Biological Applications  
10:20-10:40 4D5.2 A. Braginski (Tohoku U): Progress in Understanding of High Temperature SQUID  
10:40-11:00 4D5.3 D. Averin (SUNY-Stony Brook): [tentative title superconducting single electron device]  
11:00-11:20 4D5.4 P. Barbara (U Maryland): Coherent Emission from Josephson-Junction Arrays  
11:20-11:40 4D5.5 J. Wosik (TCSUH/U Houston): High- $T_c$  Superconducting rf Receiver Coils for Magnetic Resonance Imaging of Small Animals  
11:40-12:00 4D5.6 S. Ohshima (Yamagata University): Application of Low  $R_s$  YBCO Films to Patch Antennas  
12:00-12:20 4D5.7 V. B. Geshkenbein (ETH Zurich): Josephson Junction Devices for Quantum Computing

## THURSDAY MORNING, FEBRUARY 24 (continued)

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10:00-12:15 **SESSION 4E5 Charge Ordering** *Room 301 D*

Chair: **V. Emery** (Brookhaven Nat'l Lab)

- 10:00-10:20 **4E5.1** **C. Castellani** (U Rome): Stripe Ordering and Two-Gap Model for Underdoped Cuprates  
10:20-10:40 **4E5.2** **P. H. Hor** (TCSUH/U Houston): The Study of the Stripe Phase  $\text{La}_{1.48}\text{Nd}_{0.4}\text{Sr}_{0.12}\text{CuO}_4$  by Electrochemical Doping  
10:40-11:00 **4E5.3** **S. Kivelson** (UCLA)  
11:00-11:20 **4E5.4** **T. Venkatesan** (U of Maryland): Novel Experiment Elucidating the Stripe-Phase Mechanism in YBCO  
11:20-11:40 **4E5.5** **J.-Q. Li** (Nat'l. Lab for Superconductivity, Chinese Acad. of Sci): Structural Evolution and Superconducting Phase Separation in  $\text{La}_2\text{CuO}_{4+x}$   
11:40-12:00 **4E5.6** **Y. Koike** (Tohoku U): 1/8 Anomaly in the Bi-2212 and Y-123 Phases  
12:00-12:15 **4E5.7** **S.-W. Cheong** (Bell Labs/Lucent Technologies): Striped Charge/Orbital Ordering in Mixed-Valent Manganites

## THURSDAY AFTERNOON, FEBRUARY 24

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12:15-1:45 **4BB Brown Bag Lunch-PUBLIC LECTURE** *George Bush Ballroom B*

Chairs: **P. M. Grant** (EPRI), **K. Fossheim** (Norwegian U of Sci. & Tech.)

**What's "Super" About Superconductivity? A Millennium Progress Report**

12:15-12:30 Pick up Brown Bag lunches

12:30-12:35 Introduction of Panel Members: **P. M. Grant** (EPRI)

12:35-12:45 **4BB.1** **J. R. Schrieffer** (NHFML): The Science of HTS

12:45-12:55 **4BB.2** **C. W. Chu** (TCSUH/U Houston): HTS Materials

12:55-1:05 **4BB.3** **K. Fossheim** (Norwegian U of Sci. & Tech.): Superconductivity: Nature's Own Miracle (An Internet Lesson)

1:05-1:10 **4BB.4** **P. M. Grant** (EPRI): Power Applications of HTS

1:10-1:15 **4BB.5** **H. Weinstock** (AFOSR): Electronic Applications of HTS

1:15-1:20 **4BB.6** **D. Gubser** (NRL): Communications and Space Applications

1:20-1:25 **4BB.7** **H. Fujimoto** (RTRI): Transportation Applications

1:25-1:45 Question/Answer with Audience

*Hosts and Hostesses: Aldine High School Superconductivity Center Students*

1:45-3:45 **4PO POSTER SESSIONS** *Hall D*

**4PO1** HTS Theory

**4PO2** c-Axis Cohesion

**4PO3** Novel Junctions

**4PO4** ARPES and Fermi Surface

**4PO5** Neutron Diffraction/NMR/Spectroscopy

**4PO6** Microstructure/HTS Properties

**4PO7** Substitution Effect on High Temperature Superconductors

**4PO8** Novel Non-Cuprates and Non-Superconducting Oxides

**4PO9** Superconducting Electronics and Hybrid Systems

3:00 **Coffee Break** *Hall D*

(during Poster Sessions)

# THURSDAY AFTERNOON, FEBRUARY 24 (continued)

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## 3:45-6:15 CONCURRENT SESSIONS 6

### 3:45-6:15 SESSION 4A6 Spectroscopy and Phase Separation *Room 303 A*

Chairs: **Y. Endoh** (Tohoku U), **J. H. Ranninger** (CRTBT-CNRS, Grenoble)

- 3:45-4:05 **4A6.1** **C. P. Slichter** (U Illinois-Urbana): Spatial Modulation of the NMR Properties of the Cuprates  
4:05-4:25 **4A6.2** **D. Mihailovic** (V.V. Jozef Stefan Inst.): Quasiparticle Relaxation Dynamics in Cuprates and Lifetimes of Low-energy States: Femtosecond from Underdoped to Overdoped YBCO and Mercury Compounds  
4:25-4:45 **4A6.3** **T. Imai** (MIT): NMR Study of "Stripe" Phase in  $(\text{La,Nd,Eu})_{2-x}\text{Sr}_x\text{CuO}_4$   
4:45-5:05 **4A6.4** **A. de Lozanne** (U Texas-Austin): Scanning Tunneling Spectroscopy of the Chain Layer in YBCO  
5:05-5:25 **4A6.5** **H. H. Wen** (Nat'l Lab for Supercond., Chinese Acad. Sci.): Macroscopic Phase Separation and Superconductivity in  $\text{Bi}_2\text{Sr}_{2-x}\text{La}_x\text{CuO}_6$  Single Crystals  
5:25-5:45 **4A6.6** **S. Kashiwaya** (U Tokyo): Tunneling Spectroscopy and Surface States of YBCO and NCCO  
5:45-6:05 **4A6.7** **C. Renner** (U Geneva): Scanning Tunneling Gap Spectroscopy of Cuprate Superconductors

### 3:45-6:15 SESSION 4B6 Vortex Dynamics *General Assembly Hall A*

Chairs: **T. Giamarchi** (Lab de Physique des Solides); **D. Bhattacharya** (Natl. Phys. Lab, New Delhi)

- 3:45-4:05 **4B6.1** **M. C. Marchetti** (Syracuse): Vortex Dynamics in Confined Geometries  
4:05-4:25 **4B6.2** **G. Crabtree** (Argonne Nat'l Lab): Driven Vortex Dynamics  
4:25-4:45 **4B6.3** **F. Pardo** (Lucent Technologies): Dynamic Studies of Vortices from Single Flux Lines to Lattices Lines  
4:45-5:05 **4B6.4** **C. Goupil** (ISMRA, Caen): Small Angle Neutron Scattering and Vortex Lattice Dynamical Phase Diagram  
5:05-5:25 **4B6.5** **F. Nori** (U Michigan): Vortex Dynamics in Superconductors  
5:25-5:45 **4B6.6** **M. N. Kunchur** (U South Carolina): Vortex Instability and the Normal State at Low Temperatures  
5:45-6:00 **4B6.7** **D. Dominguez** (Centro Atomico Bariloche): Dynamical Transition in the c-Axis Correlation in 3D Driven Vortex Lattices  
6:00-6:15 **4B6.8** **R. J. Wijngaarden** (Vrije U, Amsterdam): Pattern Formation Due to Non-linear Vortex Diffusion

### 3:45-6:15 SESSION 4C6 Non-Cuprates I *Room 302 A*

Chairs: **A. Bishop** (Los Alamos Nat'l. Lab), **J. Dow** (Arizona St. U)

- 3:45-4:05 **4C6.1** **Y. Maeno** (Kyoto U): Field-Temperature Phase Diagram of  $\text{Sr}_2\text{RuO}_4$   
4:05-4:25 **4C6.2** **D. J. van Harlingen** (U Illinois-Urbana): Testing the Symmetry of Unconventional Superconductors beyond the Cuprates and beyond *d*-wave  
4:25-4:45 **4C6.3** **Y. Liu** (Penn.State U): Pseudo Gap Picture for the Normal State of  $\text{Sr}_2\text{RuO}_4$   
4:45-5:05 **4C6.4** **F. Steglich** (Max Planck Inst.-Dresden): Unconventional Normal-State Properties and Superconductivity in Heavy-Fermion Metals  
5:05-5:25 **4C6.5** **M. Sigrist** (Kyoto U): Why Broken Time Reversal Symmetry Occurs in Unconventional Superconductors?  
5:25-5:45 **4C6.7** **S. Yamanaka** (Hiroshima U): High- $T_c$  Superconductivity in Electron-Doped Layer Structured Metal Nitride Halides  
5:45-6:00 **4C6.8** **E. Baggio-Saitovitch** (CBPF, Brazil): Electrical Quadrupole Interaction in  $\text{RNi}_n\text{BnC}$  ( $n=1,2$ ) Compounds as Obtained From  $^{57}\text{Fe}$  Mossbauer Spectroscopy,  $c'/a$ -ratio and the Occurrence of Superconductivity  
6:00-6:15 **4C6.9** **A. Heilman** (TCSUH/U Houston): Field-Induced Crossover in  $\text{La}_{0.7}\text{Pb}_{0.3}\text{MnO}_3$

## THURSDAY AFTERNOON, FEBRUARY 24 (continued)

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### 3:45-6:05 SESSION 4D6 Novel Junctions Room 301 F

Chairs: J. Clarke (U California-Berkeley), A. Braginski (Tohoku U)

- 3:45-4:05 **4D6.1** A. M. Goldman (U Minnesota): Spin Injection and Andreev Reflection in Ferromagnet-Superconductor Oxide Heterostructures
- 4:05-4:25 **4D6.2** S. Takahashi (Tohoku U): Spin Injection in Ferromagnet/Superconductor/Ferromagnet Tunnel Junctions
- 4:25-4:45 **4D6.3** Q. Si (Rice U): Probing Spin-Charge Separation Using Spin Transport
- 4:45-5:05 **4D6.4** A. F. Andreev (Kapitsa Inst. of Phys. Problems, Moscow): Mesoscopics, Superconductivity, and Fundamental Properties of Space-Time
- 5:05-5:25 **4D6.5** K. Char (Seoul Nat'l U): Excess Fluctuations in Josephson Junctions of Antiferromagnetic Co-YBCO Barriers
- 5:25-5:45 **4D6.6** M. B. Walker (U Toronto): Tunnel Junction Roughness Effects on Surface Bound States in *d*-Wave Superconductors
- 5:45-6:05 **4D6.7** M. Osofsky (Naval Res. Lab): Measurement of the Transport Spin-Polarization of Oxides Using Point Contact Andreev Reflection (PCAR)

### 3:45-6:20 SESSION 4E6 Pseudo Gap II Room 301 D

Chairs: M. Randeria (Tata Inst. of Fund. Res.); H. Yasuoka (Japan Atomic Energy Rec. Inst.)

- 3:45-4:05 **4E6.1** C. Varma (Bell Labs/Lucent Technologies): The Pseudo-Gap Regime and the Quantum-Critical Point in the Cuprates
- 4:05-4:25 **4E6.2** C. Panagopoulos (U Cambridge, UK): Effects of the Pseudogap on the Anisotropic Penetration Depth of High Temperature Superconductors
- 4:25-4:45 **4E6.3** J. L. Tallon (New Zealand Inst. for Ind. Res.): Critical Doping and Pseudo Gap in HTS Cuprates: Sudden Crossover to Fermi Liquid Behavior
- 4:45-5:05 **4E6.4** M. Oda (Hokkaido U): Novel Relation Between  $T_c$  and Low-temperature ( $T \ll T_c$ ) Energy Gap  $2D_0$  in Bi2212 and La214: an STM/STS Study
- 5:05-5:25 **4E6.5** K. Levin (U Chicago): Short Coherence Length Superconductivity: Thermodynamics and Transport Properties in Underdoped Cuprates
- 5:25-5:45 **4E6.6** J. R. Cooper (U Cambridge, UK)
- 5:45-6:05 **4E6.7** T. Valla (Brookhaven National Lab): Mean Free Path of Low-Energy Excitations in Bi2212
- 6:05-6:20 **4E6.8** H. Raffy (U Paris): Normal State Transport Properties of Single- and Double-Layered BiSrCaCuO Thin Films and Pseudogap Effect

4:00-10:00 Exhibits Dismantling 3<sup>rd</sup> Level - Hall D

### OPTIONAL EVENING ACTIVITIES

NOTE: All participants must have ticket.

6:15 Departure (George R. Brown Convention Center): **OE1 Annual Houston Livestock Show & Rodeo**

[Note: Conference materials may be left at the hotels during the day, prior to departure. Due to the tight timeline, buses must depart directly from the George R. Brown Convention Center.]

Pre-paid Tickets for other optional evening activities (**Houston Rockets** basketball, **Houston Ballet**) should be picked up at the Registration Desk. A limited number of tickets may also be available for purchase. Conference transportation is not provided; however, taxi service is available to all venues. Please check with the Hotel Concierge desk for information.

# FRIDAY MORNING, FEBRUARY 25

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Note: All Sessions Will Be Held at the Hyatt Regency Hotel

- 7:00 Registration Open *2<sup>nd</sup> Level*  
7:30 Press Room Open *Mesquite (3rd Level)*  
8:00 Publications Room *Arboretum 1 & 2 (2nd Level)*
- 7:30-8:30 **INTERNATIONAL COMMITTEE BREAKFAST** *Window Box*  
(Invitation Required)
- 8:30-9:00 **Session Chair Briefing** *Speaker Preparation Room, Arboretum 5 (3rd Level)*
- 9:00-11:00 **CONCURRENT SESSIONS 7**
- 9:00-11:00 **SESSION 5A7 Non-Cuprates II** *Imperial Ballroom - Center*  
Chairs: **J. Tallon** (New Zealand Inst. for Ind. Res., Ltd), **A. Balatsky** (Los Alamos Nat'l Lab)
- 9:00-9:20 **5A7.1 B. Raveau** (CRISMAT/ISMRA-Caen): Colossal Magnetoresistance Manganites: Electron and Mn-site Doping  
9:20-9:40 **5A7.2 A. Ramirez** (Bell Labs/Lucent Technologies): Magneto-thermodynamics of the Mixed State  
9:40-10:00 **5A7.4 M. K. Wu** (Nat'l Tsing Hua U): Physical Properties of the Double Perovskite  $RA_2Ru_{(1-x)}Cu_{9x}O_{96}$  (R=Y, Ho, Gd; A=Ba, Sr)  
10:00-10:20 **5A7.5 I. Felner** (Hebrew U): Spontaneous Vortex Phase in the Magneto- Superconductor  $Gd_{1.5}Ce_{0.5}RuSr_2Cu_2O_{10-d}$  (Ru-2212)  
10:20-10:40 **5A7.6 C. Bernhard** (Max-Planck Inst.-Stuttgart): Evidence for Coexistence of Ferromagnetism and Superconductivity in the Ruthenate-Cuprate Hybrid Compound  $RuSr_2RECu_2O_{8+d}$  Obtained from Muon-Spin-Rotation Experiments  
10:40-11:00 **5A7.7 S. Reich** (Weizmann Inst. Of Sci.): Possible Nucleation of a 2D Superconducting Phase on WO<sub>3</sub> Single Crystals Surface Doped with Na<sup>+</sup>
- 9:00-11:00 **SESSION 5B7 Neutron Scattering and NMR** *Regency Room*  
Chairs: **F. J. Tranquada** (Brookhaven Nat'l. Lab), **K. Levin** (U Chicago)
- 9:00-9:20 **5B7.1 H. A. Mook, Jr.** (Oak Ridge Nat'l Lab): Inelastic Neutron Scattering by Dynamical Spin and Charge Fluctuations in Y123 and Bi2212  
9:20-9:40 **5B7.2 J. W. Lynn** (NIST): Magnetic Order and Spin Dynamics of Pr in PrBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>  
9:40-10:00 **5B7.3 Y. Endoh** (Tohoku U): Static and Dynamical Characteristics of the Spin Stripes in Both the Superconducting (metal) and Spin Glass (insulator)  
10:00-10:20 **5B7.4 B. Keimer** (Princeton): Neutron Scattering from Magnetic Excitations in YBCO and BSCCO  
10:20-10:40 **5B7.5 Y. J. Uemura** (Columbia U): Super Fluid Density, Condensation, and Phase Separation in HTSC and other Exotic Superconductors  
10:40-11:00 **5B7.6 J. Budnick** (U Connecticut): Inhomogeneous Magnetic and Electronic State in Underdoped High-T<sub>c</sub> Oxides
- 9:00-11:00 **SESSION 5C7 Microstructure/HTS Property Relation** *Imperial Ballroom - East*  
Chairs: **M. Marezio** (MASPEC/CNR, Parma), **F. Licci** (Istituto MASPEC, Italy)
- 9:00-9:20 **5C7.1 J. D. Jorgensen** (Argonne Nat'l. Lab): Defect Chemistry at Optimal Doping in Layered Cuprate Superconductors  
9:20-9:40 **5C7.2 M. Karppinen** (Helsinki U of Tech.): "Zero" Series of Multi-layered Copper Oxides, 01(n-1)n and 02(n-1)n: Synthesis and Properties Including Superconductivity  
9:40-10:00 **5C7.3 C. Bougerol-Chaillout** (CNRS Grenoble): Structural Studies of New Superconducting Bismuthates (Sr,K)BiO<sub>3</sub>  
10:00-10:20 **5C7.4 H. Yamauchi** (Tokyo Inst. of Tech.): Control of Carrier Distribution in Layered Copper Oxides for Tailoring Magnetic Irreversibility  
10:20-10:40 **5C7.5 A. Maignan** (CNRS/ISMRA): Relationships Between the Structural and Microstructural Features of the Hg Based Single Crystals and their Superconducting Properties  
10:40-11:00 **5C7.6 T. H. Geballe** (Stanford U): Understanding Cuprates with the Highest T<sub>c</sub>

# FRIDAY MORNING, FEBRUARY 25 (continued)

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9:00-11:05 **SESSION 5D7 Hybrid Systems** *Arboretum 3 & 4*  
Chair: **A. Ignatiev** (UH/TCSUH)

9:00-9:20 **5D7.2 D. Oates** (MIT Lincoln Lab): Hybrid Superconductor/Ferrite/Paraelectric Tuneable Filters

9:20-9:40 **5D7.3 M. B. Johnson** (Naval Res. Lab): Nonvolatile Switchable Josephson Junctions with Applications as Memory for Superconducting Electronics

9:40-10:00 **5D7.6 F. Wilhelm** (DELFT U of Tech): Transport in Mesoscopic Superconductor - Normal Metal Heterostructures

**& SESSION 5DL7 Pseudo Gap III**

Chair: **C. Y. Mou** (Nat'l Tsing-Hua U)

10:00-10:20 **5DL7.1 Z. Y. Weng** (TCSUH/U Houston): Spin-charge Separation: From One Hole to Finite Doping

10:20-10:35 **5DL7.2 F. Onufrieva** (LLB/CEA-Saclay): Normal and Superconducting State Anomalies of Electron Properties in the High- $T_c$  Cuprates. Comparison with ARPES and Tunneling Spectroscopy

10:35-10:50 **5DL7.3 J. F. Zasadzinski** (Ill. Inst. Tech, Chicago): High Energy Secondary Peak Structure (Hump) in Tunneling Spectra as Possible Magnetic Pseudogap

10:50-11:05 **5DL7.4 J. Bok** (ESPCI/Paris): Electron-electron Interactions in Underdoped HTSC

9:00-11:05 **SESSION 5E7 c-Axis Coherence** *Arboretum 5*

Chairs: **B. Batlogg** (Bell Labs/Lucent Technologies), **T. Timusk** (McMaster U)

9:00-9:25 **5E7.1 A. J. Leggett** (U Illinois-Urbana): "Cuprate Superconductivity: How Far Can We Get Without a 'Model'?"

9:25-9:45 **5E7.2 S. Chakravarty** (UCLA): Frustrated Kinetic Energy and the Optical Sum Rule in the High Temperature Superconductors

9:45-10:05 **5E7.3 D. van der Marel** (U Groningen): C-axis Optical Properties of High  $T_c$  Superconductors

10:05-10:25 **5E7.4 Y. Ando** (Central Res. Inst. Of Elec. Power Ind)/U Tokyo): Magnetotransport Study of the Charged Stripes in High- $T_c$  Cuprates

10:25-10:45 **5E7.5 D. A. Bonn** (U British Columbia): Anisotropy of Microwave Properties in Optimal and Under-Doped YBCO

10:45-11:05 **5E7.6 C. E. Gough** (U Birmingham): Intrinsic c-Axis Tunneling in BSCCO Crystals

11:05-11:30 **Coffee Break** *Prefunction Area*

11:30-1:00 **5PL PLENARY SESSION 5: Summary Reviews & Closing Remarks**

11:30-11:50 **5Pl.1 R. Laughlin** (Stanford): Theory

11:50-12:10 **5Pl.2 H. Takagi** (U Tokyo): Materials & Properties

12:10-12:30 **5Pl.3 B. Batlogg** (Bell Labs/Lucent Techn.): Experiments

12:30-12:50 **5Pl.4 D. Gubser** (DARPA/DSO): Applications

12:50-1:00 Concluding Remarks: **C. W. Chu** (TCSUH/U Houston)

## OPTIONAL AFTERNOON ACTIVITY

Sign-up available at Hyatt Regency- M2S-HTSC-VI Information Desk

3:15 Departure (Hyatt Regency): **Tour, Texas Center for Superconductivity at the University of Houston (TCSUH) Laboratories (3:30-5:30)**