

## CURRICULUM VITAE

RICHARD L. GREENE

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### Career Summary

- 1960 S.B. (Physics) MIT.
- 1960-62 Engineering Officer in the U.S. Navy.
- 1962-1967 Ph.D. (Physics) Stanford University.
- 1967-1970 Research Associate, Applied Physics Department, Stanford University, Stanford, California.
- 1970-1975 Research Staff Member, IBM Research Laboratory, San Jose, California.
- 1975-1979 Manager, Electronic Phenomena Group, IBM Research Laboratory, San Jose, California.
- 1979-1985 Manager, Condensed Matter Physics Group, IBM Research Laboratory, San Jose, California.
- 1985-1989 Research Staff Member, IBM T. J. Watson Research Center, Yorktown Heights, New York.
- 1989-2007 Professor of Physics and Director, Center for Superconductivity Research, University of Maryland, College Park, Maryland.
- 2007- 2010 Alford L. Ward Professor of Physics, University of Maryland, College Park, Maryland.
- 2012-2013 Interim Director, Center for Nanophysics and Advanced Materials (CNAM), University of Maryland, College Park, Maryland
- 2013- Professor of Physics, University of Maryland, College Park, MD

## **Honors**

IBM Outstanding Contribution Award, August 1975.

Professor Associe', University of Grenoble, France, 1978-1979.

Elected Fellow of the American Physical Society (APS), 1980.

Elected to Executive Committee of APS Division of Condensed Matter Physics, 1992-1995.

Thomson-ISI 200 Most Highly-cited Physicists, 1981-2001.

Chaire Parsi-Sciences, Laboratoire Physique du Solide, ESPCI, Paris, France, September 2007

Alford L. Ward Professorship of Physics, University of Maryland, 2007-2010

Elected Fellow of the American Association for the Advancement of Science (AAAS), 2010

## **Major Professional Activities**

Fellow of APS and AAAS.

APS Visiting Physicist Program, 1978.

Organizing Committee for International Conference on Quasi 1D Conductors, Dubrovnik, Yugoslavia, September 1978.

Organizing Committee for International Conference on Low Dimensional Conductors and Superconductors, Les Arcs, France, December 1982.

Organizing Committee for LT 16 International Conference, Los Angeles, California, August 1981.

Program Committee for International Conference on Magnetism, San Francisco, California, August 1985.

Program Committee for International Conference on Materials and Mechanisms of Superconductivity, Ames, Iowa, May 1985.

Chairman of Committee for APS International Prize for New Materials 1986, Member of Committee for 1985 Prize.

Program Committee for International Conference on High-Temperature Superconductors, Interlaken, Switzerland, February 1988.

Program Committee for Conference on Theoretical Foundations of High-T<sub>c</sub> Superconductivity, Aspen, Colorado, January 1988.

Users Committee for F. Bitter National Magnet Laboratory, Massachusetts Institute of Technology, Boston, Massachusetts, 1988-1991.

Participant, NSF/ONR Workshop on Research Opportunities in Superconductivity, Copper Mountain, Colorado, August 1983 and August 1991.

Vice-chairman Gordon Conference on Superconductivity, Ventura, California, January 1993.

Member of Executive Committee of DCMP Division of APS, 1992-1995.

Program Committee for International Conference on Molecular and Oxide Superconductors, Eugene, Oregon, July 1993.

Co-chairman Gordon Conference on Superconductivity, Oxnard, California, January 1994.

Co-chairman Gordon Conference on Superconductivity, Les Diablerets, Switzerland, September 1995.

Program Committee for 6<sup>th</sup> International Conference on Materials and Mechanisms of Superconductivity, Houston, Texas, February 2000.

Member of the APS Apker Award Committee for year 2000, 2001, 2002, 2003.

Program Committee for 7<sup>th</sup> International Conference on Materials and Mechanisms of Superconductivity, Rio de Janeiro, Brazil, May 2003.

National High Magnetic Field Laboratory NSF Site Review Committee, Tallahassee, Florida, December 4-6, 2005.

Program Committee for 8<sup>th</sup> International Conference on Materials and Mechanisms of Superconductivity, Dresden, Germany, July 2006.

Member of External Advisory Committee for Canadian Institute for Advanced Research (CIFAR) program on Quantum Materials, 2003-2007, 2013-present.

Chairman, External Advisory Committee for CIFAR program on Quantum Materials, 2008-2013.

Co-organizer and program chairman for the ICAM Workshop on Fe-Pnictide and Related Superconductors, College Park, Maryland, Nov 16-17, 2008.

Scientific Advisory Committee for International Conference on Quantum Effects in Solids of Today, Dec 20-23, 2010, New Delhi, India.

Co-organizer of the Workshop on a New Century of Superconductivity: Iron Pnictides and Beyond, Aspen Center for Physics, June 26-July 24, 2011.

Program Committee Chairman, 10<sup>th</sup> International Conference on Materials and Mechanisms of Superconductivity (M2S-2012), Washington, DC, July 29-Aug 3, 2012.

Member of the APS David Adler Award selection committee, 2014, 2015.

## Publications

1. Observation of a Spin-Wave Sideband in the Optical Spectrum of  $\text{MnF}_2$ , with D. D. Sell et al., *Phys. Rev. Lett.* **15**, 656 (1965).
2. Optical Linewidth and Line-Shape Studies of Energy Transfer Mechanisms between Rare-Earth Impurity Ions, with W.M. Yen, W. C. Scott, and D. L. Huber, *Phys. Rev.* **140**, 1188 (1965).
3. Optical Linewidth Studies of Energy-Transfer Mechanisms Between Impurity Ions, with W. M. Yen, W. C. Scott, D. L. Huber, *Proc. of Conf. on Physics of Quantum Electronics*, San Juan, Puerto Rico (June 1965) edited by P. L. Kelley, B. Lax, P. E. Tannewald, McGraw Hill (1966).
4. Effect of Ultraviolet Pumping on Ruby Laser Output, with J. L. Emmett and A. L. Schawlow, *Appl. Opt.* **5**, 350 (1966).
5. Magnetic Effects in the Optical Spectrum of  $\text{MnF}_2$ , with D. D. Sell et al., *J. Appl. Phys.* **37**, 1229 (1967).
6. Exciton-Magnon Effects in the Optical Spectrum of  $\text{MnF}_2$  with D. D. Sell, R. M. White, *Proc. of Conf. on Optical Properties of Ions in Crystals*, Baltimore, Maryland (September 1966), edited by H. M. Crosswhite, H. W. Moos, J. Wiley (1967).
7. Optical Exciton-Magnon Absorption of  $\text{MnF}_2$ , with D. D. Sell and R. M. White, *Phys. Rev.* **158**, 489 (1967).
8. Impurity-Induced Optical Fluorescence in  $\text{MnF}_2$ , with D. D. Sell and G. F. Imbusch, *Phys. Rev.* **171**, 600 (1968).
9. Heat Capacity Measurement on Small Samples at Low Temperatures, with R. Bachman et al., *Rev. Sci. Instr.* **43**, 205 (1972).
10. Heat Capacity of Superconducting Aluminum Films, with C. N. King and R. Zubeck, *Phys. Rev. B* **6**, 3297 (1972).
11. Specific heat of One-Dimensional  $\text{K}_2\text{Pt}(\text{CN})_4\text{Cl}_{0.03n} \cdot \text{H}_2\text{O}$ , with W. A. Little, *Phys. Rev. Lett.* **29**, 718 (1972).
12. Temperature Dependence of the Near-infrared Optical Properties of TTF-TCNQ, with P. M. Grant, G. C. Wrighton, and G. Castro, *Phys. Rev. Lett.* **31**, 1311 (1973).
13. Pressure Dependence of the Metal-Insulator Transition in TTF-TCNQ, with C. W. Chu, J. M. E. Harper, and T. H. Geballe, *Phys. Rev. Lett.* **31**, 1491 (1973).
14. Heat Capacity Measurements of Small Samples - Granular Al Films, with C. N. King, R. B. Zubeck, *Low Temperature Physics - LT 13*, Vol. 4, p. 626, edited by K. D. Timmerhaus, W. J. O'Sullivan, and E. F. Hammel, Plenum Press (New York, 1974).

15. Specific Heat, Optical and Transport Properties of Hexagonal Tungsten Bronzes, with C. N. King, J. A. Benda, T. H. Geballe, *Low Temperature Physics - LT 13*, Vol. 3, p. 411, edited by K. D. Timmerhaus, W. J. O'Sullivan, and E. F. Hammel, Plenum Press (New York, 1974).
16. Optical Reflectivity of TTF-TCNQ, with P. M. Grant, G. Castro, Symposium on Superconductivity and Lattice Instabilities, Gatlinburg, Tennessee, September 1973, *Solid State Comm.* **14**, 100 (1974).
17. Low-Temperature Specific Heat of Polysulfur Nitride, (SN)<sub>x</sub> with P. M. Grant and G. B. Street, *Phys. Rev. Lett.* **34**, 89 (1975).
18. Superconductivity in Polysulfur Nitride, (SN)<sub>x</sub> with G. B. Street and L. J. Suter, *Phys. Rev. Lett.* **34**, 577 (1975).
19. Optical Properties of (SN)<sub>x</sub>, with G. B. Street and P. M. Grant, *Phys. Rev. Lett.* **35**, 1743 (1975).
20. Pressure Dependence of Superconductivity and Normal Conductivity in (SN)<sub>x</sub>, with W. D. Gill et al., *Phys. Rev. Lett.* **35**, 1732 (1975).
21. The Preparation and Characterization of Crystals of the Superconducting Polymer, (SN)<sub>x</sub>, with G. B. Street et al., *Mat. Res. Bull.* **10**, 877 (1975).
22. Thermopower of an Isostructural Series of Organic Conductors, with P. M. Chaikin, S. Etemad, and E. Engler, *Phys. Rev. B* **13**, 1627 (1976).
23. The Upper Critical Field of Superconducting (SN)<sub>x</sub>, with L. J. Azevedo et al., *Solid State Comm.* **19**, 197 (1976).
24. Comparison of the Physical Properties of (SN)<sub>x</sub> to Related Organic Polymers and TTF-TCNQ, with P. M. Grant et al., *Mol. Cryst. Liq. Cryst.* **32**, 171 (1976).
25. Two Band Transport and Disorder Effects in a Series of Organic Alloys: (TTF<sub>1-x</sub>TSeF<sub>x</sub>)-TCNQ, with P. M. Chaikin et al., *Solid State Commun.* **19**, 1201 (1976).
26. The Structure, Conductivity, and Thermopower of HMTTF-TCNQ, with J. J. Mayerle et al., *Solid State Commun.* **20**, 943 (1976).
27. Specific Heat of Polysulfur Nitride (SN)<sub>x</sub>, with J. M. E. Harper, P. M. Grant, and G. B. Street, *Phys. Rev. B* **15**, 539 (1977).
28. Properties of Polysulfurnitride - The First Superconducting Polymer, with B. H. Schechtman et al., *Proc. Inter. Symposium on Electrets and Dielectrics*, edited by Academia Brasileira de Ciencias, 405 (1977).
29. Superconducting Properties of the Crystalline Polymer (SN)<sub>x</sub>, with W. D. Gill, L. J. Azevedo, and W. G. Clark, *Ferroelectrics* **16**, 243 (1977).
30. The Preparation and Properties of (SN)<sub>x</sub>, with G. B. Street, *IBM Jour. of Res. and Dev.* **21**, 99 (1977).

31. Electronic Properties of the Superconducting Polymer,  $(\text{SN})_x$ , with G. B. Street, *Proc. of NATO-ASI on Chemistry and Physics of One-Dimensional Metals*, edited by H. J. Keller (Plenum Press 1977), p. 167.
32. Superconducting Properties of  $(\text{SN})_x$ , with W. D. Gill et al., *Proc. of Conf. on Organic Conductors*, Lecture Notes in Physics #65 (Springer-Verlag 1977).
33. Modification of the Electronic Properties of  $(\text{SN})_x$  Modified by Halogens, with G. B. Street et al., *Chem. Comm.* **407**, (1977).
34. Structure and Electronic Properties of  $(\text{SN})_x$  Modified by Bromine, with G. W. Gill et al., *Phys. Rev. Lett.* **38**, 1305 (1977).
35. The Upper Critical Field of Superconducting Polysulfur Nitride,  $(\text{SN})_x$ , with L. J. Azevedo et al., *Anisotropy Effects in Superconductors*, edited by H. Weber (Plenum Press 1977).
36. Pressure Dependence of Superconductivity in  $(\text{SN})_x$ , with L. R. Bickford and W. D. Gill, *Phys. Rev. B* **17**, 3525 (1978).
37. Electron Tunneling in  $(\text{SN})_x$  and Conducting Organic Salts, with P. M. Chaikin and P. K. Hansma, *Phys. Rev. B* **17**, 179 (1978).
38. Thermopower of M-TCNQ Doped TTF-TCNQ and TSeF-TCNQ, with P. M. Chaikin and E. M. Engler, *Solid State Comm.* **25**, 1009 (1978).
39. Superconducting Properties of Brominated  $(\text{SN})_x$ , with J. F. Kwak and W. W. Fuller, *J. de Phys.* **C6**, 1401 (1978).
40. Magnetic Properties of the Superconducting Polymers  $(\text{SN})_x$  and  $(\text{SNBr}_{0.4})_x$ , with R. H. Dee et al., *J. de Phys.* **C6**, 444 (1978).
41. Polythiazyl Halides: Bromine Derivatives of  $(\text{SN})_x$  and  $\text{S}_4\text{N}_4$ , with G. B. Street et al., *Ann. N.Y. Acad. Sci.* **313**, 737 (1978).
42. Properties of Brominated  $(\text{SN})_x$ , with W. D. Gill, et al., *Lecture Notes in Physics #96*, edited by S. Barisic et al. (Springer-Verlag 1979).
43. An Electronic Model for Conductivity in  $(\text{SN})_x$ , with P. M. Grant et al., *Lecture Notes in Physics #96*, edited by S. Barisic et al. (Springer-Verlag 1979).
44. Properties of Doped Polyacetylene,  $(\text{CH})_x$ , with T. C. Clarke, W. D. Gill, P. M. Grant, J. F. Kwak and G. B. Street, *Molecular Metals*, edited by W. E. Hatfield, Plenum Press (1979), p. 203.
45. New Systems Comprised of Non-Metallic Elements, with R. H. Baughman et al., *Molecular Metals*, edited by W. E. Hatfield, Plenum Press (1979), p. 505.
46. Thermoelectric Power of  $\text{NbSe}_3$  and  $\text{Nb}_{1-x}\text{Ta}_x\text{Se}_3$ , with J. F. Kwak, P. M. Chaikin, and N. P. Ong, *Lecture Notes in Physics #96*, edited by S. Barisic et al. (Springer-Verlag, 1979).

47. Transport Properties of Doped Polyacetylene, with J. F. Kwak, T. C. Clarke, and G. B. Street, *Solid State Comm.* **31**, 355 (1979).
48. The Effect of Pressure on the Superconducting Transition Temperature in TaSe<sub>3</sub>, with K. Yamaya, T. Geballe, and J. F. Kwak, *Solid State Commun.* **31**, 627 (1979).
49. (SnBr<sub>0.4</sub>)<sub>x</sub>: A Superconductor of Increased Dimensionality, with J. F. Kwak and W. W. Fuller, *Phys. Rev. B* **20**, 2658 (1979).
50. One-Dimensional Spin Diffusion in Polyacetylene, (CH)<sub>x</sub>, with M. Nechtschein, F. Devreux, and T. C. Clarke, *Phys. Rev. Lett.* **44**, 356 (1980).
51. Thermopower and Transport Properties of AsF<sub>5</sub> Doped Polyacetylene, with J. F. Kwak et al., *Synthetic Metals* **1**, 213 (1980).
52. Magnetic Properties of the Superconducting Polymers (SN)<sub>x</sub> and (SnBr<sub>0.4</sub>)<sub>x</sub>, with R. H. Dee, J. F. Carolan, and B. G. Turrell, *Phys. Rev. B* **22**, 174 (1980).
53. Magnetic Resonance Studies of Soliton Diffusion in (CH)<sub>x</sub>, with D. Devreau, K. Holczer, and M. Nechtschein, *Physics in One Dimension*, edited by J. Bernasconi and T. Schnieder, Springer Berlin (1980), p. 194.
54. Pressure Dependence of Superconductivity in (TMTSF)<sub>2</sub>PF<sub>6</sub>, with E. M. Engler, *Phys. Rev. Lett.* **45**, 1587 (1980).
55. Study of Nonlinear Electric Field Effects in (TMTSF)<sub>2</sub>PF<sub>6</sub>, with P. M. Chaikin, G. Gruner, and E. M. Engler, *Phys. Rev. Lett.* **45**, 1874 (1980).
56. Thermopower of Doped and Damaged NbSe<sub>3</sub>, with P. M. Chaikin et al., *Solid State Comm.* **39**, 553 (1981).
57. Magnetic Quantum Oscillations in (TMTSF)<sub>2</sub>PF<sub>6</sub>, with J. F. Kwak, J. E. Schirber and E. M. Engler, *Phys. Rev. Lett.* **46**, 1296 (1981).
58. Low Temperature Properties of an Organic Superconductor, with P. Haen et al., *Physica* **108B**, 1181 (1981).
59. Magnetoresistance and Hall Effect in (TTSF)<sub>2</sub>PF<sub>6</sub>, with P. M. Chaikin et al., *Phys. Rev. B* **24**, 7155 (1981).
60. High Field Phase Transition in (TMTSF)<sub>2</sub>PF<sub>6</sub> Under Pressure, with L. J. Azevedo et al., *Physica* **108B**, 11833 (1981).
61. Effect of Radiation Damage on Transport in (TMTSF)<sub>2</sub>PF<sub>6</sub>, with M. Y. Choi et al., *Phys. Rev. B.* **25**, 6208 (1982).
62. Critical Field Anisotropy in (TMTSF)<sub>2</sub>ClO<sub>4</sub>, with M. Y. Choi, et al., *Solid State Comm.* **41**, 225 (1982).

63. Chemistry and Electrocrystallization of Organic Metals and Superconductors, with E. M. Engler et al., *Mol. Cryst. Liq. Cryst.* **79**, 371 (1982).
64. Magnetotransport and Nonlinear Effects in  $(\text{TMTSF})_2\text{PF}_6$ , with P. M. Chaikin et al., *Mol. Cryst. Liq. Cryst.* **79**, 435 (1982).
65. Magnetotransport in  $(\text{TMTSF})_2\text{PF}_6$  and  $(\text{TMTSF})_2\text{ClO}_4$  Under Pressure, J.F. Kwak, J.E. Schirber, R.L. Greene, and E.M. Engler, *Mol. Cryst. Liq. Cryst.*, **79**, 467 (1982).
66. Some Properties of the  $(\text{TMTSF})_2\text{X}$  Superconductors, with P. Haen et al., *Mol. Cryst. Liq. Cryst.* **79**, 539 (1982).
67. Compressibilities of  $(\text{TMTSF})_2\text{PF}_6$ , with B. Morosin et al., *Phys. Rev. B* **26**, 2660 (1982).
68. Superconductivity in a New Family of Organic Conductors, with S. S. P. Parkin et al., *Phys. Rev. Lett.* **50**, 270 (1983).
69. Low Temperature Metallic Conductivity in Nickel Phthalocyanine Iodide, with J. Martinsen et al., *J. Am. Chem. Soc.* **105**, 677 (1983).
70. Pressure Dependence of Superconductivity in  $\text{Tl}_2\text{Mo}_6\text{Se}_6$ , with S. Z. Huang et al., *Solid State Comm.* **5**, 749 (1983).
71. Superconductivity and Metal-Insulator Transitions in  $(\text{TMTSF})_2\text{X}$ , with P. M. Chaikin and M. Y. Choi, *J. Mag. and Mag. Mat.* **31**, 1268 (1983).
72. Organic Materials and Superconductivity, in *Advances in Superconductivity*, J. Ruvalds and B. Deaver, editors, Plenum Press (1983), p. 225.
73. Superconductivity and Anomalous Magnetotransport in  $(\text{TMTSF})_2\text{ClO}_4$ , with P. M. Chaikin and M. Y. Choi, *J. de Physique Colloq.* **C3**, 783 (1983).
74. Low Temperature Transport Measurements on  $(\text{TMTSF})_2\text{ClO}_4$ , with P.M. Chaikin and M. Y. Choi, *J. de Physique Colloq.* **C3**, 791 (1983).
75. A Sulfur Based Organic Molecular Superconductor,  $(\text{BEDT-TTF})_2\text{ReO}_4$ , with S. S. P. Parkin et al., *J. de Physique Colloq.* **C3**, 791 (1983).
76. Far Infrared Properties of  $(\text{TMTSF})_2\text{ClO}_4$ , with W. A. Challener and P. L. Richards, *J. de Physique Colloq.* **C3**, 873 (1983).
77.  $(\text{TMTSF})_2\text{ClO}_4$  in High Magnetic Fields, with P. M. Chaikin et al., *Phys. Rev. Lett.* **51**, 2333 (1983).
78. Far Infrared Measurements of  $(\text{TMTSF})_2\text{ClO}_4$ , with W. A. Challener and P. L. Richards, *Solid State Comm.* **51**, 765 (1984).



79. Competition between Superconductivity and Localization in Ultrathin a-MoGe Films, with J. M. Graybeal and M. R. Beasley, *Proceeding of LT 17*, edited by U. Eckern et al., North Holland (1984), p. 731.
80. Conducting Organic Materials, with G. B. Street, *Science* **226**, 651 (1984).
81. Organic Superconductors, with P. M. Chaikin, *Physica* **126B**, 431 (1984).
82. A Highly One-Dimensional Molecular Metal: Nickel Phthalocyanine Iodide, with J. Martinsen et al., *Phys. Rev. B* **30**, 6269 (1984).
83. Anomalous Hall Effect and Magnetotransport Effects in the Organic Superconductor (TMTSF)<sub>2</sub>ClO<sub>4</sub>, with P. M. Chaikin, *Phil. Trans. R. Soc. (London)* **A314**, 97 (1985).
84. Narrow Pressure Domain for Superconductivity in (TMTSF)<sub>2</sub>ClO<sub>4</sub>, with S. P. Parkin and J. Voiron, *Mol. Cryst. Liq. Cryst.* **119**, 33 (1985).
85. Magneto Thermopower of (TMTSF)<sub>2</sub>PF<sub>6</sub>, with M. Y. Choi et al., *Phys. Rev. B* **31**, 3576 (1985).
86. (TMTSF)<sub>2</sub>ClO<sub>4</sub> in High Magnetic Fields, with P. M. Chaikin et al., *Mol. Cryst. Liq. Cryst.* **119**, 79 (1985).
87. The Metal Insulator Transition and Superconductivity in Amorphous MoGe Alloys, with S. Yoshizumi, D. Mael, and T. H. Geballe, in *Localization and Metal-Insulator Transitions*, edited by H. Fritzsche and D. Adler (Plenum 1985).
88. Metal-Spine Conductivity in a Partially Oxidized Metallomacrocyclic: (Phthalocryninato) Cobalt Iodide, with J. Martinsen et al., *J. Am. Chem. Soc.* **107**, 6915 (1985).
89. Anomalous Transition in Copper Phthalocyanine Iodide, with B. Hoffman et al., *Mol. Cryst. Liq. Cryst.* **120**, 427 (1985).
90. Magnetic Field Dependent Susceptibility of (TMTSF)<sub>2</sub>ClO<sub>4</sub>, with A. Feldblum et al., *Mol. Cryst. Liq. Cryst.* **119**, 87 (1985).
91. Magnetic Field Induced Transition and Quantum Oscillations, with H. Schwenk and S. S. P. Parkin, *Phys. Rev. Lett.* **56**, 667 (1986).
92. Superconductivity and Magnetism in Organic Metals, with P. M. Chaikin, *Physics Today* **39**, 24 (1986).
93. Superconductivity in Sulphur-based Organic Superconductors: A Volume Property, with H. Schwenk, V. Y. Lee and S. S. Parkin, *Phys. Rev. B* **34**, 3156 (1986).
94. Quantum Oscillations in (TMTSF)<sub>2</sub>ReO<sub>4</sub>, with S. S. Parkin and H. Schwenk, *Physica* **143**, 388 (1986).
95. Thermal Conductivity of (TMTSF)<sub>2</sub>ClO<sub>4</sub>, with M. Y. Choi and P. M. Chaikin, *Phys. Rev. B* **34**, 7727 (1986).

96. Study of Volume Superconductivity in  $\beta$ -(ET)<sub>2</sub>X Superconductors, with S. Schwenk, V. Y. Lee, and S. S. P. Parkin, *Synthetic Metals* **10**, 163 (1987).
97. Far-Infrared Measurement of the Energy Gap of La<sub>1.8</sub>Sr<sub>0.2</sub>CuO<sub>4</sub>, with Z. Schlesinger, J. G. Bednorz and K. A. Mueller, *Phys. Rev. B* **35**, 5334 (1987).
98. Diamagnetic Shielding and Meissner Effect in the High-T<sub>c</sub> Superconductor La<sub>1.8</sub>Sr<sub>0.2</sub>CuO<sub>4</sub>, with H. Maletta, A. P. Malozemoff, D. C. Cronemeyer and C. C. Tsuei, *Solid State Comm.* **62**, 323 (1987).
99. Evidence for Electron-Electron Correlations in La<sub>2</sub>CuO<sub>4</sub> and La<sub>2-x</sub>Sr<sub>x</sub>CuO<sub>4</sub> Superconductor, with H. Maletta et al., *Solid State Comm.* **63**, 379 (1987).
100. Magnetic X-Ray Scattering Measurements on MnF<sub>2</sub>, with A. I. Goldman et al., *Phys. Rev. B* **36**, 5609 (1987).
101. Melting of Xenon on Silver; The Hexatic Phase in the Weak-Substrate Limit, with N. Greiser et al., *Phys. Rev. Lett.* **59**, 1706 (1987).
102. Cu(pc)I: A Molecular Metal with a One-dimensional Array of Local Moments Embedded in a Fermi Sea of Charge Carriers, with M. Y. Ogawa et al., *J. Am. Chem. Soc.* **109**, 1115 (1987).
103. Evidence for Electron-Electron Correlations in Pure and Sr-doped La<sub>2</sub>CuO<sub>4</sub>, with H. Maletta et al., *Jap. J. Appl. Phys.* **26**, 1143 (1987).
104. Evidence for Superconductivity in La<sub>2</sub>CuO<sub>4</sub>, with P. M. Grant et al., *Phys. Rev. Lett.* **58**, 2482 (1987).
105. Antiferromagnetic Correlations and Superconductivity in the La<sub>2</sub>CuO<sub>4</sub> Class of Oxides, with H. Maletta et al., *Physica* **148B**, 233 (1987).
106. Some Observations on the Thermopower of the High-T<sub>c</sub> Superconductors, with R. C. Yu et al., *Phys. Rev. B* **37**, 7963 (1988).
107. Temperature Dependence of the Magnetic Penetration Depth in YBaCuO Crystals, with L. Krusin-Elbaum et al., *Phys. Rev. Lett.* **62**, 217 (1989).
108. Hole Concentrations, Hall Number and T<sub>c</sub> Relationships in Substituted YBa<sub>2</sub>Cu<sub>3</sub>O<sub>y</sub>, with M. W. Shafer et al., *Phys. Rev. B* **39**, 2914 (1989).
109. Comment on Magnetic Penetration Depth of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>, with L. Krusin-Elbaum and A. P. Malozemoff, *Phys. Rev. Lett.* **62**, 2886 (1989).
110. Hole Concentration -T<sub>c</sub> Relationships for Nd and Zn Substitutions in YBa<sub>2</sub>Cu<sub>3</sub>O<sub>y</sub>, with M. W. Shafer, T. Penney and B. L. Olson, *MRS Proceedings* (April 1989).
111. Anomalous Hall Effect on Superconductors Near their Critical Temperatures, with S. J. Hagen et al., *Phys. Rev. B* **41**, 11639 (1990).

112. "Organic and Oxide Superconductors: An Experimental Comparison", Proceedings of International Conference on Organic Superconductors, ed. V. Z. Kresin and W. A. Little (Plenum, New York 1990), p. 7.
113. Flux-Flow Nernst Effect in Epitaxial  $\text{YBa}_2\text{Cu}_3\text{O}_7$ , with S. J. Hagen et al., C. J. Lobb, Phys. Rev. B **42**, 6777 (1990).
114. Flux Creep and Irreversibility in Electron-Doped  $\text{Pr}_{1.85}\text{Th}_{0.15}\text{CuO}_{4-y}$ , with J. L. Peng, Physica C **172**, 143 (1990).
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**Partial Listing of Invited Talks at International Conferences since 1975** (many other invitations turned down for a variety of reasons)

"Polymeric Conductors," Materials Research Council Conference on One- and Two-Dimensional Conductors, La Jolla, California, July 1975.

"Three Classes of One-Dimensional Conductors: An Experimental Comparison," ACS Meeting, Chicago, Illinois, August 1975.

"Properties of the Superconducting Polymer,  $(\text{SN})_x$ ," Miniconference on One-Dimensional Conductors at LT-14, Helsinki, Finland, August 1975.

"Properties of  $(\text{SN})_x$ : A Polymeric Superconductor," APS Meeting at Atlanta, Georgia, March 1976.

"Properties of the Superconducting Polymer,  $(\text{SN})_x$ ," Gordon Conference on Inorganic Chemistry at New Hampton, New Hampshire, August 1976.

"Electronic Properties of the Superconducting Polymer,  $(\text{SN})_x$ ," NATO Advanced Summer Institute on Chemistry and Physics of One-Dimensional Metals, Bolzano, Italy, August 1976.

"One-Dimensional Conductors - A Status Report," Western Spectroscopy Association Conference, Asilomar, California, January 1977.

"Organic and Polymeric Metals," Molecular Crystal Symposium VIII, Santa Barbara, California, June 1977.

"Physical Properties of Polysulfurnitride,  $(\text{SN})_x$ ," Synthesis and Properties of Low-Dimensional Materials Conference, New York, New York, June 1977.

"Superconducting Properties of Brominated  $(\text{SN})_x$ ," International Conference on Low Temperature Physics LT15, Grenoble, France, August 1978.

"Properties of Brominated  $(\text{SN})_x$ ," International Conference on Quasi One-Dimensional Conductors, Dubrovnik, Yugoslavia, September 1978.

"Magnetic Resonance Studies of Soliton Diffusion in Polyacetylene," International Conference on Physics in One Dimension, Fribourg, Switzerland, August 1980.

"SDW, Superconductivity and Nonlinear Effects in  $(\text{TMTSF})_2\text{PF}_6$  and Related Organic Salts," Gordon Conference on Chemistry and Physics of Solids, Plymouth, New Hampshire, July 1981.

"Magnetotransport and Nonlinear Effects in  $(\text{TMTSF})_2\text{PF}_6$ ," International Conference on Low Dimensional Conductors, Boulder, Colorado, August 1981.

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"Review of Organic Superconductors," Workshop on Synthetic Metals, Los Alamos, New Mexico, April 1982.

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"The Future of Organic Superconductivity," Workshop on Problems in Superconductivity, Copper Mountain, Colorado, August 1983.

"Organic Conductors," National Academy of Science Annual Forum on Solid State Science, Washington, D.C., March 1984.

"Anomalous Hall Effect and Magneto-Transport Effects in  $(\text{TMTSF})_2\text{ClO}_4$ ," Royal Society (London) Meeting on Electrical and Magnetic Properties of Low-Dimensional Solids, London, England, June 1984.

"Organic Superconductors," Plenary Lecture at International Conference on Low Temperature Physics (LT 17), Karlsruhe, Germany, August 1984.

"Quantum Oscillations and Field-Induced Transitions in  $(\text{TMTSF})_2\text{ReO}_4$ ," Yamada Conference XV on Physics and Chemistry of Quasi One-Dimensional Conductors, Lake Kawaguchi, Yamanashi, Japan, June 1986.

"Survey of High- $T_c$  Superconductivity Research at IBM," New England Conference on High- $T_c$  Superconductivity, Boston, Massachusetts, April 1987.

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“Anomalous Transport Properties in Superconducting  $\text{Nd}_{1.85}\text{Ce}_{0.15}\text{CuO}_{4-\delta}$  Films”, First Polish-US Conference on High- $T_c$  Superconductivity, Wroclaw, Poland, September 1995.

"Thermal, Magnetic, and Electronic Properties of Manganese Oxides", APS March Meeting, St. Louis, Missouri, March 1996.

“Current Research Issues for the Electron-doped Cuprates”, NATO Summer School on Gap Symmetry and Fluctuations in High- $T_c$  Superconductors, Cargese, Corsica, September 1997 (presented by P. Fournier).

“Superconducting and Normal State Properties of Electron-doped Cuprates”, APS March Meeting, Los Angeles, CA, March 1998 (presented by P. Fournier).

“Specific Heat, Tunneling, and Oxygen Isotope Studies of the Charge-Order Transition in the Manganites”, JRCAT Workshop on Complex Phenomena of Correlated Electrons in Oxides, Big Island, Hawaii, May 1999.

“Organic Metals”, 6<sup>th</sup> International Conference on Materials and Mechanisms of Superconductivity, (M2S-HTSC-VI), Houston, Texas, Feb 2000 – Part of a symposium in Honor of T. H. Geballe.

“Status of Electron-doped High- $T_c$  Superconductors”, ITP Workshop on High- $T_c$  Superconductors, UCSB, Santa Barbara, CA August 2000.

“Transport Properties of n-doped Cuprates”, Aspen Winter Conference on High- $T_c$  Superconductivity, Aspen, CO, January 2001.

“Tunneling and Specific heat Measurements of n-doped Cuprates”, Gordon Conference on Superconductivity, Oxford, UK, September 2001.

“Tunneling and Specific Heat of n-doped Cuprates below 20K”, International Conference on Physics and Chemistry of Molecular and Oxide Superconductors, Hsinchu, Taiwan, August 2002.

“Anomalous Properties of n-doped Cuprates in the Normal and Superconducting States, Workshop on CMR Manganites and Related Oxides, Telluride, CO, July 2002.

“Nernst Effect in the n-doped High- $T_c$  Superconductors  $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$ ”, Gordon Conference on Superconductivity, Ventura, CA, January 12-17, 2003.

“Probing the Normal State of the n-doped Cuprates”, 10<sup>th</sup> International Workshop on Oxide Electronics, Augsburg, Germany, September 11-13, 2003.

“Electron-doped Cuprates”, CIAR Quantum Materials Workshop, L’Esterel, Quebec, Canada, October 16-19, 2003.

“Oxide-based Diluted Magnetic Semiconductors” Magnetic and Superconducting Materials Workshop, Barcelona, Spain, October 23-25, 2003 (presented by S. Ogale).

“Electron-doped Cuprates: “Doping dependence of the Low T Normal State and the Pairing Symmetry””, International Workshop on Novel Quantum Phenomena in Transition Metal Oxides, Sendai, Japan, November 5-8, 2003.

“The Doping Dependence of the Ground State in the Electron-doped Cuprates”, APS March Meeting, Montreal, Canada, March 20-26, 2004.

“Evidence for a Quantum Phase Transition in  $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$  from Hall and Resistivity Measurements”, NATO Workshop on Unconventional Superconductivity, Miami, Florida, January 2004 (presented by Y. Dagan).

“Quantum Critical Point in Electron-doped Superconductors”, Gordon Research Conference on Superconductivity, Oxford, England, September 19-24, 2004.

“Some Properties of Electron-doped Cuprates”, Aspen Winter Conference on High- $T_c$  Superconductivity, Aspen, CO, January 13, 2005.

“Novel Properties of Electron-doped Cuprates”, SPIE Conference on Strongly Correlated Materials, San Diego, CA, August 3, 2005.

“Evidence of Quantum Criticality in Electron-doped Cuprates”, (presented by A. Zimmers) LT24-24<sup>th</sup> International Conference on Low Temperature Physics, Orlando, FL, August 16, 2005.

“Evidence for Quantum Criticality in the n-doped Cuprates”, 12<sup>th</sup> International Workshop on Oxide Electronics”, Cape Cod, MA, October 3, 2005.

“Evidence for Quantum Criticality in Electron-doped Cuprates”, APS March Meeting, Baltimore, MD, March 14, 2006 (presented by Y. Dagan).

“Evolution of Superconductivity in Electron-doped Cuprates”, APS March Meeting, Baltimore, MD, March 14, 2006 (presented by G. Blumberg).

“Status and Future Opportunities for n-type Cuprates”, DOE Workshop on Basic Research Needs for Superconductivity, Washington DC, May 8-11, 2006.

“Quantum Criticality in the n-doped Cuprates”, CIAR Quantum Materials Workshop, Montreal, Canada, May 11-14, 2006.

“Novel Normal State Properties of n-doped Cuprates”, International Conference on Low-energy Excitations in high- $T_c$  Superconductors, Stuttgart, Germany, July 5-7, 2006.

“High Field Transport in Electron-doped Cuprates”,  $M^2$ -HTSC VIII International Conference, Dresden, Germany, July 7-14, 2006.

“Quantum Criticality and High-field Properties of Electron-doped Cuprates”, Workshop on Novel States of Unstable and Stable Quantum Matter, Trieste, Italy, August 14-25, 2006.

“Quantum Criticality and High-field Properties of Electron-doped Cuprates”, International Workshop on Electronic States and Disorder Effects in Cuprate Superconductors, Beijing, China, November 9-11, 2006.

“The Neglected Electron-doped Cuprates—What Do They Tell Us About the Physics of High- $T_c$  Superconductivity?”, Workshop on Superconductivity and Magnetism in Novel Materials, Ramat Gan, Israel, May 6-10, 2007.

“Transport Evidence of Quantum Criticality in Electron-doped Cuprates”, Int. Sym. on Superconductivity ISS 2007, Tsukuba, Japan, Nov. 5-7, 2007.

“Transport Evidence for Quantum Criticality in Electron-doped Cuprates”, German Physical Society Annual Meeting, Berlin, Germany, Feb. 25-29, 2008.

“Quantum Critical Properties of Electron-doped Cuprates”, COFUS08, Dresden, Germany, June 30-July 4, 2008.

“Recent Results in High- $T_c$  Superconductors”, Discussion Leader presentation at Gordon Conference on Correlated Electron Systems, University of New England, Biddeford, ME., June 8-13, 2008.

“Recent Results in Electron-doped Cuprates”, Aspen Workshop on Strongly Correlated Systems, Aspen, CO., July 27- Aug 8, 2008.

“Quantum Criticality and other Properties of Electron-doped Cuprates”, 6<sup>th</sup> International Conference Stripes 2008, Erice, Sicily, Italy, July 26- Aug 1, 2008 (presented by Yoram Dagan).

“Where to search for new superconductors”, Conference on Critical Issues Related to Higher Temperature Superconductors, Kavli Institute for Theoretical Physics, USCB, Santa Barbara, CA, June 22, 2009.

“Broad-based Search for New and Practical Superconductors”, AFOSR Joint Electronics Workshop, Arlington, VA, 27 May 2009.

“Quantum Criticality in Electron-doped Cuprates”, Workshop on Correlated Behavior and Quantum Criticality, Aspen CO, Aug 9-16, 2009.

“Josephson Effect studies of pairing symmetry in Fe-based superconductors”, APS March meeting, Portland, Ore. March 15, 2010 (presented by X. H. Zhang).

- “Broad-based search for new and practical superconductors”, Air Force Program review, Washington, D.C., August 7, 2010.
- “Correlation between spin fluctuations and pairing in electron-doped cuprates”, Workshop on Principles and Design of Strongly Correlated Electronic Systems, Trieste, Italy, August 11, 2010.
- “Broad-based search for new and practical superconductors”, China/US Workshop on Novel Superconductors, Beijing, China, September 27, 2010.
- “Contrasting electron and hole-doped cuprates”, CIFAR Quantum Materials Program meeting, Whistler, BC, Canada, 15 October, 2010.
- “Correlation between spin fluctuations and pairing in electron-doped cuprates”, International Conference on Quantum Effect on Solids of Today, New Delhi, India, Dec 21, 2010.
- “Cooper pairing by spin fluctuations in copper oxide superconductors”, CIFAR Quantum Materials Program meeting, Montreal, Canada, 13 October, 2011.
- “Anomalous enhancement of  $T_c$  in electron-doped copper oxide heterostructures”, ICAM Workshop on New Frontiers in the Physics of 2D Electron Systems, Buenos Aires, Argentina, 23 Nov., 2011.
- “ Overview of MURI program on Broad-based Search for new superconductors”, US Air Force China Workshop, Santa Barbara, CA, 12 December 2011.
- “Anomalous Enhancement of  $T_c$  in n-doped Cuprate Multilayers”, IMPACT-2012, Orsay, France, 11 September 2012.
- “Where to find High-Temperature Superconductors”, IBM Almaden Institute Workshop on Superconductivity 297K, San Jose, CA., October 17, 2012.
- “High Temperature Superconductivity: Present Science and Materials Research”, TcSUH 25<sup>th</sup> Anniversary Symposium on Creativity and Innovation, University of Houston, Texas, November 19, 2012.
- “Overview of recent results from the MURI search for new superconductors”, Third China/US Workshop on Novel Superconductors, Hong Kong, China, January 24, 2013.
- “What do electron-doped cuprates tell us about Cooper pairing in high- $T_c$  superconductors”, Trends, Challenges and Emergent New Phenomena in Multi-Functional Materials, Sorrento, Italy, May 20, 2013.
- “ Recent experimental studies of SmB<sub>6</sub>”, Disorder, Dynamics, Frustration and Topology in Quantum Condensed Matter, Aspen, CO, June 19, 2013.
- “Is there a topological surface state in the Kondo insulator SmB<sub>6</sub>”, Condensed Matter Physics seminar, University of Bristol, Bristol, UK, September 13, 2013.
- “Surface states in the Kondo insulator SmB<sub>6</sub>”, Workshop on Topology, Correlations and Interfaces in Quantum Matter, Orsay, France, September 18, 2013.

“Fermiology and phase diagram of electron-doped cuprates”, CIFAR Quantum Materials Program meeting, Vancouver, BC, Canada, October 18, 2013.

“What do electron-doped cuprates tell us about Cooper pairing in high-T<sub>c</sub> superconductors”, NUSNNI Advances in Condensed Matter Physics Workshop, NUS Nanotechnology Institute, Singapore, January 27, 2014.

“Topological Surface States in the Kondo Insulator SmB<sub>6</sub>”, NUSNNI Advances in Condensed Matter Physics Workshop, NUS Nanotechnology Institute, Singapore, January 28, 2014.

“Topological Surface States in the Kondo Insulator SmB<sub>6</sub>?”, Condensed Matter Physics Seminar, ESPCI, Paris, France, July 3, 2014.

“What do electron-doped cuprates tell us about Cooper pairing in high-T<sub>c</sub> superconductors”, International Conference on Strongly Correlated Electron Systems (SCES), Grenoble, France, July 9, 2014.

“What do electron-doped cuprates tell us about the origin of the pairing in high-T<sub>c</sub> superconductors”, NSF Condensed Matter Physics PI Workshop, Arlington, Virginia, August 7, 2014.

“Overview of recent results from the MURI search for new superconductors”, Fourth China/US Workshop on Novel Superconductors, Arlington, Virginia, 18 August, 2014.

“Advanced Superconducting Materials: Update and Plans”, AFOSR Quantum Electronics Program Review, Arlington, VA, March 24, 2015.

“What do electron-doped cuprates tell us about Cooper pairing in high-T<sub>c</sub> superconductors”, Zhong-Guan-Cun Invited Lecture on Condensed Matter Physics, Institute of Physics, Beijing, China, May 22, 2015.

“New perspectives on the origin of the superconductivity and the pseudogap in copper oxide superconductors”, Gordon Research Conference on Superconductivity, Hong Kong, China, May 27, 2015.

“Observation of charge order in the electron-doped cuprates”, SCES 2015, Barcelona, Spain, July 6, 2015.

“Overview of recent results in n-doped cuprates”, College de France, Paris, France, June 25, 2015.

“Spin fluctuations and charge order in electron-doped cuprates” International Conference on Materials and Mechanisms of Superconductivity (M2S2015), Geneva, Switzerland, Aug. 25, 2015.

“Charge order, Pseudogap, and Quantum critical behavior in electron-doped cuprates: Relation to T<sub>c</sub> and hole-doped cuprates”, SCHTC16, Dresden, Germany, May 23, 2016.

“Low temperature transport and Fermi surface reconstruction in electron-doped cuprates: Relation to T<sub>c</sub>?”, SNS2016, Ludwigsburg (Stuttgart), Germany, June 24, 2016.

“Low temperature transport and Fermi surface reconstruction in electron-doped cuprates: Relation to T<sub>c</sub>?”, Workshop on high-T<sub>c</sub> superconductivity, Aspen, CO., July 10, 2016.

“Fermi surface reconstruction and low T transport in electron-doped cuprates: Relation to hole-doped?”, Condensed Matter Seminar, Stanford University, Aug. 5, 2016.

“Fermi surface reconstruction and low T transport in electron-doped cuprates: Relation to hole-doped?”, Condensed Matter Seminar, ESPCI seminar, Paris, France, Oct. 3, 2016.

“What is the nature of the strange metal state—experimental view”, Lorentz Center Workshop on Unconventional Superconductors, Leiden, Netherlands, March 2, 2017.

“The current experimental status of the high-T<sub>c</sub> problem”, APS March meeting, New Orleans, Louisiana March 14, 2017.

“The current experimental status of the high-T<sub>c</sub> problem”, Mid-Atlantic Senior Physics Group meeting, College Park, MD, April 19, 2017.

“Do we understand the electron-doped cuprates—some old and new results”, Workshop on cracking the enigma of cuprate superconductors, Jouvence, Canada, May 25, 2017.

“Cooper pairing in cuprates: A view from the electron-doped side”, Gordon conference on Superconductivity, Waterville Valley, NH, June 7, 2017.

“The current experimental status of the high-T<sub>c</sub> problem”, invited seminar at CRISMAT, Caen, France, July 10, 2017.

“Low temperature transport and Fermi surface reconstruction in electron-doped cuprates” SCES2017, Prague, Czech Republic, July 18, 2017.

“Fermi surface reconstruction and low T transport in cuprates”, ESPCI, Paris, France, Nov 23, 2017.

“Anomalous Transport Properties of Electron-doped La<sub>2-x</sub>Ce<sub>x</sub>CuO<sub>4</sub>” M2S2018, Beijing, China, August 22, 2018.

“Overview of Klein tunneling experiments on SmB<sub>6</sub> at UMD”, Workshop on Topological Physics, Aspen Institute of Physics, July 14, 2018.

“Quantum criticality as seen from magnetoresistance and thermopower measurements in electron-doped cuprates: possible link with the superconductivity”, CIFAR Quantum Materials workshop, Nov. 18, 2018.

