

Ying Liu

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Research Interests Contemporary condensed matter and materials physics, focusing on superconductivity and quantum electronic materials. Systems under current study include *p*-wave superconductor Sr₂RuO₄, strongly correlated materials, doubly and singly connected superconductors, single-sheet superconductors, interfacial superconductivity, and graphene.

Education **1991, Ph. D.** in Physics, University of Minnesota.
Thesis: "Electrical Transport and Quantum Phase Transitions of Ultrathin Films of Metals Prepared by *in situ* Low Temperature Deposition."
Advisor: Professor Allen M. Goldman.

1984, M. S. in Physics, the Institute of Physics, Chinese Academy of Sciences, Beijing.
Thesis: "Directed Lattice Animals with Restricted Valence and Directed Self-Avoiding Walks on Certain Directed Random Fractals."
Advisor: Professor Zhao-Qing Zhang.

1982, B. S. in Physics, Peking University, Beijing.
Thesis: "Exciton Superconductivity in Organic Polymers."
Advisor: Professor Li-Yuan Zhang.

Employment **7/05 – present**, Professor of Physics, Department of Physics, Pennsylvania State University.

7/00 – 6/05, Associate Professor of Physics, Department of Physics, Pennsylvania State University.

8/94 – 6/00, Assistant Professor of Physics, Department of Physics, Pennsylvania State University.

10/91 - 7/94, Postdoctoral Research Associate, Department of Physics, University of Colorado.

Honors 1997 NSF Career Award.
2006 NSFC Young Scientist Award (Type B).
Fellow, American Physical Society.

Membership American Physical Society.
American Association for the Advancement of Science.

List of Publications

1. Y. Liu, Z. Q. Zhang, and Z. R. Yang, "Directed Site Lattice Animals with Restricted Valence," **J. Phys. A** 17, 2667 (1984).
2. Y. Liu and Z. Q. Zhang, "Directed Self-Avoid Walks on Certain Directed Random Fractals," **J. Phys. A** 18, 1027 (1985).
3. Y. S. Yang, Y. Liu, and P. M. Lam, "A Self-Avoid Walk Model for Proteins," **Z. Phys. B** 59, 445 (1985).
4. D. B. Haviland, Y. Liu, and A. M. Goldman, "Onset of Superconductivity in the Two-Dimensional Limit," **Phys. Rev. Lett.** 62, 2180 (1989).
5. D. B. Haviland, Y. Liu, B. Nease, and A. M. Goldman, "The Onset of Superconductivity in Ultra-Thin Amorphous Metal Films," **Physica B** 165&166, 1457 (1990).
6. D. B. Haviland, Y. Liu, T. Wang, and A. M. Goldman, "The Interplay Between Localization and Superconductivity," **Physica B** 169, 238 (1991).
7. Y. Liu, K. A. McGreer, B. Nease, D. B. Haviland, G. Martinez, J. W. Halley and A. M. Goldman, "Scaling of the Insulator-to-Superconductor Transition in Ultrathin Amorphous Bi Films," **Phys. Rev. Lett.** 67, 2068 (1991).
8. Y. Liu, B. Nease and A. M. Goldman, "Superconducting Fluctuation Effects at a Silver-Germanium Interface," **Phys. Rev. B** 45, (Rapid Commun.) 10143 (1992).
9. Y. Liu, D. B. Haviland, L. I. Glazman, and A. M. Goldman, "Resistive Transitions in Ultrathin Superconducting Films: Possible Evidence for Quantum Tunneling of Vortices," **Phys. Rev. Lett.** 68, 2224 (1992).
10. Y. Liu, B. Nease, K. A. McGreer, and A. M. Goldman, "Scaling of the Electrical Conductivity of Ultrathin Amorphous Palladium Films," **Europhys. Lett.** 19, 409 (1992).
11. Y. Liu, D. B. Haviland, L. I. Glazman and A. M. Goldman, "Evidence for Quantum Tunneling of Vortices in Superconductors," **J. Low Temp. Phys.** 89, 187 (1992).
12. Y. Liu, D. B. Haviland, L. I. Glazman and A. M. Goldman, a reply to a comment, **Phys. Rev. Lett.** 69, 2998 (1992).
13. Y. Liu, D. B. Haviland, B. Nease and A. M. Goldman, "Insulator-to-Superconductor Transition in Ultrathin Films of Metals," **Phys. Rev. B** 47, 5931 (1993).
14. Y. Liu and A. M. Goldman, "Superconductor-Insulator Transitions in Two Dimensions," **Mod. Phys. Lett. B** 8, 277-300 (1994).
15. Y. Liu and John C. Price, "Ionization of Charge-Anticharge Pairs in Ultrathin Palladium Films," **Mod. Phys. Lett. B** 9, 939 (1995).
16. S. Madhavan, B. J. Gibbons, A. Dabkowski, H. A. Dabkowska, S. Trolrier-McKinstry, Ying Liu, and D. G. Schlom, "Growth of Epitaxial *a*-Axis and *c*-Axis Oriented Sr₂RuO₄ Films," in **Epitaxial Oxide Thin Films II**, eds. D. K. Fork, J. S. Speck, R. M. Wolf, and T. Shiosaki. (Proceedings of Materials Research Society Conference, Pittsburgh, 1996).
17. S. Madhavan, D. G. Schlom, A. Dabkowski, H. A. Dabkowska, and Y. Liu, "Growth of Epitaxial *a*-Axis and *c*-Axis Oriented Sr₂RuO₄ Films," **App. Phys. Lett.** 68, 559 (1996).
18. Y. Liu, J. A. Mitchell, S. Madhavan, D. G. Schlom, A. Dabkowski and H. A. Dabkowska, "Electrical Transport Studies of Epitaxial Sr₂RuO₄ Films," **Cze. J. Phys.** 46, 1113-1114 (1996). (Proceedings of 21th International Conference on Low Temperature Physics, Prague, 1996.)

19. S. Madhavan, Y. Liu, D. G. Schlom, A. Dabkowski, H. A. Dabkowsska, Y. Suzuki, I. Takeuchi, Z. Trajeanovic, and R. P. Sharma, "Epitaxial Sr_2RuO_4 Heterostructures," **IEEE Trans. Appl. Supercond.** 7, 2063-2066 (1997).
20. D. G. Schlom, B. A. Merritt, S. Madhavan, Y. Liu, M. E. Hawley, G. W. Brown, A. Dabkowski, H. A. Dabkowska, R. Uecker, and P. Reiche, "Epitaxial $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}/\text{Sr}_2\text{RuO}_4$ Heterostructures," in **Epitaxial Oxide Thin Films III**, edited by D. G. Schlom, C. B. Eom, M. E. Hawley, C. M. Foster, and J. S. Speck, Vol. 474. (Proceedings of Materials Research Society Conference, Pittsburgh, 1997).
21. S. Madhavan, J. A. Mitchell, T. Nemoto, S. Wozniak, Y. Liu, D. G. Schlom, A. Dabkowski, and H. A. Dabkowska, "Growth of Epitaxial Sr_2RuO_4 Films and $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}/\text{Sr}_2\text{RuO}_4$ Heterostructures." **J. Crystal Growth** 174, 417 - 423 (1997). (Proceedings of 1997 Conference on Crystal Growth, Vail, 1997.)
22. D. G. Schlom, S. B. Knapp, S. Wozniak, L-N. Zou, J. Park, Y. Liu, M. E. Hawley, G. W. Brown, A. Dabkowski, H. A. Dabkowska, R. Uecker, and P. Reiche, "Growth of epitaxial $(\text{Sr, Ba})_{n+1}\text{Ru}_n\text{O}_{3n+1}$ films," **Supercond. Sci. Technol.** 10, 891-895 (1997). (Proceedings of the Third European Conference on Applied Superconductivity (EUCAS).)
23. R. Jin, Y. Zadorozhny, Y. Liu, D. G. Schlom, F. Lichtenberg, J. G. Bednorz, "Normal-State Magnetoresistance of Sr_2RuO_4 Single Crystals," **J. Phys. and Chem. of Solids**, 59, 2215-2217 (1998).
24. R. Jin, Y. Zadorzhny, D. G. Schlom, Y. Mori, Y. Maeno, and Y. Liu, "Observation of Anomalous Temperature Dependence of the Critical Current in $\text{Pd}/\text{Sr}_2\text{RuO}_4/\text{Pb}$ Junctions," **Phys. Rev. B** 59, 4433-4438 (1999).
24. J. T. Rijssenbeek, R. Jin, Y. Zadorozhny, Y. Liu, B. Batlogg, and R. J. Cava, "The Electrical and Magnetic Properties of the Two Crystallographic Forms of BaRuO_3 ," **Phys. Rev. B** 59 4561-4564 (1999).
25. Y. Jia, M. A. Zurbuchen, A. H. Carim, and D. G. Schlom, L-N. Zou, S. Briczinski, and Y. Liu, "Epitaxial Growth of Metastable Ba_2RuO_4 Films with the K_2NiF_4 Structure." **App. Phys. Lett.** 74, 3830-3832 (1999).
26. R. Jin, Y. Liu, and F. Lichtenberg, "Linear-Field Dependence of the Normal-State In-Plane Magnetoresistance of Sr_2RuO_4 ," **Phys. Rev. B** 60, 10418-104422 (1999).
27. M.M. Rosario, Yu. Zadorozhny, and Y. Liu, "Cutoff Length in the Logarithmic Interaction between a Vortex-Antivortex Pair in Quench Condensed Superconducting Bi Films," **Phys. Rev. B** 61, 7005-7009 (2000).
28. R. Jin, Y. Liu, Z. Mao, and Y. Maeno, "Selection Rule in Josephson Coupling Between a Conventional *s*-Wave Superconductor and Sr_2RuO_4 ," **Europhys. Lett.** 51, 341-345 (2000).
29. Yu. Zadorozhny, D. R. Herman, and Y. Liu, "Resistance Oscillations and Magnetic Fingerprints in Superconducting $\text{Au}_{0.7}\text{In}_{0.3}$ Cylinders," **Phys. Rev. B** 63, 144521 (2001).
30. Y. Liu, R. Jin, Z. Q. Mao, K. D. Nelson, M. K. Haas and R. J. Cava, "Electrical Transport Properties of Single-Crystal $\text{Sr}_3\text{Ru}_2\text{O}_7$: The Possible Existence of an Antiferromagnetic Instability at Low Temperatures," **Phys. Rev. B** 63, 174435 (5 pages) (2001).
31. S. M. Loureiro, D. P. Young, R. J. Cava, R. Jin, Y. Liu, P. Bordet, Y. Qin, H. Zandbergen, M. Godinho, M. Núñez-Regueiro, and B. Batlogg, "Enhancement of Metallic Behavior in Bismuth Cobaltates through Lead Doping," **Phys. Rev. B** 63, 094109 (2001).
32. M.A. Zurbuchen, Y. Jia, S. Knapp, A.H. Carim, D.G. Schlom, L-N. Zou, and Y. Liu, "Suppression of Superconductivity by Crystallographic Defects in Epitaxial Sr_2RuO_4 Films," **Appl. Phys. Lett.** 78, 2351-2353 (2001).

33. P. Khalifah, K. D. Nelson, R. Jin, Z. Q. Mao, Y. Liu, Q. Huang, X. P. A. Gao, A. P. Ramirez and R. J. Cava, "Non-Fermi-Liquid Behaviour in $\text{La}_4\text{Ru}_6\text{O}_{19}$," **Nature** 411, 669 - 671 (2001).
34. Z.Q. Mao, K.D. Nelson, R. Jin, Y. Liu, and Y. Maeno, "Observation of Andreev Surface Bound State in the 3-K Phase Region of Sr_2RuO_4 ," **Phys. Rev. Lett.** 87, 037003 (2001).
35. Yu. Zadorozhny and Y. Liu, "Fractional-Flux Little-Parks Resistance Oscillations in Superconducting $\text{Au}_{0.7}\text{In}_{0.3}$ Cylinders," **Europhys. Lett.** 55, 712 (2001).
36. Y. Liu, Yu. Zadorozhny, M. M. Rosario, B. Y. Rock, P. T. Carrigan, and H. Wang, "Destruction of the Global Phase Coherence in Ultrathin, Doubly Connected Superconducting Cylinders," **Science** 294, 2332 (2001).
37. M.M. Rosario and Y. Liu, "Electrical Transport Properties of Quench Condensed Bi Films at the Initial Stage of Film Growth," **Phys. Rev. B** 65, 094506 (2002).
38. Yu. Zadorozhny and Y. Liu, "Structural and Electrical Transport Properties of Superconducting $\text{Au}_{0.7}\text{In}_{0.3}$ Films: A Random Array of Superconductor-Normal Metal-Superconductor (SNS) Josephson Junctions," **Phys. Rev. B** 66, 054512 (2002).
39. P. Khalifah, R. Osborn, Q. Huang, H.W. Zandbergen, R. Jin, Y. Liu, D. Mandrus, and R. J. Cava, "Orbital Ordering Transition in $\text{La}_4\text{Ru}_2\text{O}_{10}$," **Science** 297, 2237-2240 (2002).
40. M.M. Rosario, Yu. Zadorozhny, B.Y. Rock, P.T. Carrigan, H. Wang, and Y. Liu, "Superconducting fluctuations in the destructive regime of ultrathin, superconducting cylinders," **Physica B** 329-333, 1415 - 1416 (2003).
41. K. D. Nelson, Z.Q. Mao, Y. Liu, and Y. Maeno, "Experimental tests on spin-triplet superconductivity in Sr_2RuO_4 : Single-particle tunneling, Josephson effects, and phase-sensitive measurements," **Physica C** 388-389, 491-492 (2003).
42. Y. Liu, K.D. Nelson, Z.Q. Mao, R. Jin, and Y. Maeno, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ," **J. Low Temp. Phys.** 131, 1059 (2003).
43. Z. Q. Mao, M-A. Rosario, K. D. Nelson, K. Wu, I. G. Deac, P. Schiffer, Y. Liu, T. He, K. A. Regan, and R.J. Cava, "Experimental Determination of Superconducting Parameters for the Intermetallic Perovskite Superconductor MgCNi_3 ," **Phys. Rev. B** 67, 094502 (2003).
44. Z. Q. Mao, T. He, M.M. Rosario, K. D. Nelson, D. Okuno, B. Ueland, I. G. Deac, P. Schiffer, Y. Liu, and R.J. Cava, "Quantum phase transition in quasi-one-dimensional $\text{BaRu}_6\text{O}_{12}$," **Phys. Rev. Lett.** 90, 186601 (2003).
45. Mingliang Tian, Jingguo Wang, Joseph Snyder, James Kurtz, Ying Liu, Peter Schiffer, Thomas E. Mallouk, and M. H. W. Chan, "Synthesis and characterization of superconducting single-crystal Sn wire," **App. Phys. Lett.** 83, 1620 (2003).
46. Z. Q. Mao, M. M. Rosario, K. D. Nelson, K. Wu, I. G. Deac, P. Schiffer, Y. Liu, T. He, K. A. Regan, and R. J. Cava, Reply to "Comment on 'Experimental determination of superconducting parameters for the intermetallic perovskite superconductor MgCNi_3 '," **Phys. Rev. B** 69, 136502 (2004).
47. H. Wang, J. Wang, M. Tian, L. Bell, E. Hutchinson, M. M. Rosario, Y. Liu, A. Amma, and T. Mallouk, "Metallic contacts with individual Ru nanowires prepared by electrochemical deposition and the suppression of superconductivity in ultrasmall Ru grains," **Appl. Phys. Lett.** 84, 5329 (2004).
48. J. Hooper, Z. Q. Mao, K. D. Nelson, Y. Liu, M. Wada, and Y. Maeno, "Anomalous Josephson network in the Ru- Sr_2RuO_4 eutectic system," **Phys. Rev. B** 70, 014510 (2004).
49. K.D. Nelson, Z.Q. Mao, Y. Maeno, and Y. Liu, "Odd-parity superconductivity in Sr_2RuO_4 ," **Science** 306, 1151-1154 (2004).

50. V. O. Dolocan, C. Veauvy, Y. Liu, F. Servant, P. Lejay, D. Mailly and K. Hasselbach, "Imaging of vortex chains in Sr_2RuO_4 ," **Physica C: Superconductivity** 404, 140-144 (2004).
51. Mingliang Tian, Jinguo Wang, James S. Kurtz, Ying Liu, M. H. W. Chan, Theresa S. Mayer, and Thomas E. Mallouk, "Dissipation in quasi-one-dimensional superconducting single-crystal Sn nanowires," **Phys. Rev. B** 71, 104521 (2005).
52. V. O. Dolocan, C. Veauvy, F. Servant, P. Lejay, K. Hasselbach, Y. Liu, and D. Mailly, "Observation of Vortex Coalescence in the Anisotropic Spin-Triplet Superconductor Sr_2RuO_4 ," **Phys. Rev. Lett.** 95, 097004 (2005).
53. H. Wang, M. M. Rosario, N. A. Kurz, B. Y. Rock, M. Tian, P. T. Carrigan, and Y. Liu, "Possible observation of phase separation near a quantum phase transition in doubly connected ultrathin superconducting cylinders of aluminum," **Phys. Rev. Lett.** 95, 197003 (2005).
54. Mingliang Tian, Jinguo Wang, Nitesh Kumar, Tianheng Han, Yoji Kobayashi, Ying Liu, Thomas E. Mallouk and Moses H. W. Chan, "Observation of superconductivity in granular Bi nanowires fabricated by electrodeposition," **Nano Lett.** 6, 2773-2780 (2006).
55. H. Wang, N.A. Kurz, and Y. Liu, "Destructive regime and quantum phase transition in doubly connected superconducting cylinders," AIP Conference Proceedings Vol. 850, Low Temperature Physics: 24th International Conference on Low Temperature Physics; Ed. Y. Takano, S.P. Hershfield, S.O. Hill, P.J. Hirschfeld, and A.M. Goldman (2006). p961.
56. J. Hooper, M. Zhou, Z. Q. Mao, Y. Liu, R. Perry, and Y. Maeno, "Critical current of the Sr_2RuO_4 - $\text{Sr}_3\text{Ru}_2\text{O}_7$ eutectic system," **Phys. Rev. B** 73, 132510 (2006).
57. W. Tian, J. H. Haeni, E. Hutchinson, B. L. Sheu, M. A. Zurbuchen, M. M. Rosario, P. Schiffer, X. Q. Pan, Y. Liu, and D. G. Schlom, "Effect of dimensionality on magnetism in the layered $\text{Sr}_{n+1}\text{Ru}_n\text{O}_{3n+1}$ oxide series," **App. Phys. Lett.** 90, 022507 (2007).
58. H. Wang, M.M. Rosario, H.L. Russell, and Y. Liu, "Observation of double resistance anomalies and excessive resistance in mesoscopic superconducting $\text{Au}_{0.7}\text{In}_{0.3}$ rings with phase separation," **Phys. Rev. B** 75, 064509 (2007).
59. Wei Bao, Z.Q. Mao, M. Zhou, J. Hooper, J.W. Lynn, R.S. Freitas, P. Schiffer, Y. Liu, H.Q. Yuan, and M. Salamon, "Magnetic transition and magnetic structure of $\text{Sr}_4\text{Ru}_3\text{O}_{10}$," submitted to **Phys. Rev. Lett.** (2006). cond-mat/0607428.
60. Z. Long, C. Andreou, Z.Q. Mao, H. Yaguchi, Y. Maeno, Y. Liu, "Observation of a mixed pairing state in Ru microdomains embedded in Sr_2RuO_4 ," submitted to **Phys. Rev. Lett.** cond-mat/0608066 (2006).
61. N. Staley, H. Wang, C. Puls, J. Forster, T.N. Jackson, K. McCarthy, B. Clouser, Y. Liu, "Lithography-Free Fabrication of Graphene Devices," **Appl. Phys. Lett.** 90, 143518 (2007).
62. M. M. Rosario, H. Wang, Yu. Zadorozhny, and Y. Liu, "Observation of a possible metallic state induced by a parallel magnetic field in superconducting $\text{Au}_{0.7}\text{In}_{0.3}$ samples with very low normal-state sheet resistance," **J. Low Tem. Phys.** 147, 623 (2007).
63. J.R. Kirtley, C. Kallin, C.W. Hicks, E.-A. Kim, Y. Liu, K.A. Moler, Y. Maeno, K.D. Nelson, "Upper limit on supercurrents in Sr_2RuO_4 ," **Phys. Rev. B** 76, 014526 (2007).
64. Zhuan Xu, Xiangfan Xu, Rafael S. Freitas, Zhenyi Long, Meng Zhou, David Fobes, Minghu Fang, Peter Schiffer, Zhiqing Mao, and Ying Liu, "Existence of two electronic states in $\text{Sr}_4\text{Ru}_3\text{O}_{10}$ at low temperatures," **Phys. Rev. B** 76, 094405 (2007).
65. Neal Staley, Conor Puls, and Y. Liu, "Suppression of conductance fluctuation in weakly disordered mesoscopic graphene samples near the charge neutral point," **Phys. Rev. B** 77, 155429 (2008). arXiv:0709.0493.

66. Y. Liu, H. Wang, Yu. Zadorozhny, M. M. Rosario, N. A. Kurz, B. Y. Rock, and P. T. Carrigan, "Ultrathin, doubly connected superconducting cylinders: A link between one- and two-dimensional superconductors," *Physica C* **468**, 331 - 336 (2008).
67. Xiangfan Xu, Zhuan Xu, Tijiang Liu, David Fobes, Zhiqiang Mao, and Ying Liu, " Band-dependent normal-state coherence in Sr_2RuO_4 : Evidence from Nernst and thermopower measurements," *Phys. Rev. Lett.* **101**, 057002 (2008).
68. C. P. Puls, N. E. Staley, Y. Liu, "Interface states and anomalous quantum oscillations in graphene hybrid structures," submitted to *Physical Review B* (2008). arXiv:0809.1392.
69. J. A. Robinson, C. P. Puls, N. E. Staley, J. Stitt, M.A. Fanton, K. V. Emtsev, T. Seyller, Y. Liu, "Raman Topography and Strain Uniformity of Large-Area Epitaxial Graphene," accepted *Nano Letters* (2009). arXiv:0809.1616.
70. Neal E. Staley, Linjun Li and Zhuan Xu, and Ying Liu, "Electric field effect on superconductivity in atomically thin flakes of NbSe_2 ," *Phys. Rev. B* (2008).
71. Yiqun A. Ying, Karl Nelson, Iosef G. Deac, Peter Schiffer, Peter Khalifah, Robert J. Cava, and Ying Liu, "Magneto electrical transport properties and possible quantum critical fluctuation in $\text{La}_4\text{Ru}_6\text{O}_{19}$ with metal-metal bonding," to be submitted to *Phys. Rev. B* (2008).

Invited Talks

1. April 6, 1987. Department of Physics, University of Cincinnati, "Statistical Mechanics of Polymers and Percolation Theory."
2. March 29, 1991. Department of Physics, University of Colorado, Boulder, "Scaling of Electrical Conductance in Ultrathin Films."
3. April 28, 1991. Department of Physics, State University of New York at Stony Brook, "Quantum Phase Transitions in Two-Dimensional Systems."
4. May 1, 1991. IBM T. J. Watson Laboratory, "Insulator-Superconductor Transition in Ultrathin Amorphous Bi Films."
5. September 28, 1991. Department of Physics, University of Minnesota, "Quantum Phase Transitions and Quantum Tunneling of Vortices."
6. July 8, 1992. International Conference on Quantum Phase Transitions, University of California, "Insulator-Superconductor and Insulator-Metal Transitions in Ultrathin Films of Metals."
7. October 1, 1992. Department of Physics, The Hong Kong University of Science and Technology, "Disordered Superconductors and Quantum Tunneling of Vortices."
8. October 15, 1993. Department of Physics, University of Nevada, "Charge Kosterlitz-Thouless-Berezinskii Transition in Ultrathin Pd Films."
9. February 21, 1994. Department of Physics, The Pennsylvania State University, "Superconductor-Insulator Transition and Disordered Mesoscopic Superconductors."
10. February 24, 1994. Department of Physics, Cornell University, "Superconductor-Insulator Transition and Disordered Mesoscopic Superconductors."
11. April 1, 1994. Department of Physics, Louisiana State University, "Charge Kosterlitz-Thouless-Berezinskii Transition in Ultrathin Pd Films."
12. May 7, 1996. Physics Department, Northeastern University, "New Physics in Disordered Mesoscopic Superconductors."
13. May 10, 1996. Physics Department, Boston University, "Superconductor-Insulator Transition and Disordered Mesoscopic Superconductors."

14. May 14, 1997. Department of Physics, University of Washington, "Mesoscopic Physics of Disordered Superconductors".
15. May 16, 1997. Department of Physics, University of Cincinnati, "Mesoscopic Physics of Disordered Superconductors".
16. November 11, 1997. International Workshop on The Physics of Manganites, Ruthenates, and Related Materials, National High Magnetic Field Laboratory, "Pb/Sr₂RuO₄/Pb Junction Study of Pairing Symmetry in Sr₂RuO₄."
17. March 5, 1998. Indiana University of Pennsylvania, "New Physics in Disordered Mesoscopic Superconductors."
18. March 17, 1998. APS 1998 March Meeting, Los Angeles, California, "Electrical Transport Properties and the Symmetry of the Pairing State in Sr₂RuO₄."
19. June 2, 1998. Institute of Physics, Academia Sinica, Taiwan, "New Physics in Disordered Mesoscopic Superconductors."
20. June 6, 1998. Workshop on Strongly Correlated Electronic Systems, National Center for Theoretical Sciences, Taiwan, "Normal-State Transport Properties and the Symmetry of Superconducting Order Parameter in Sr₂RuO₄."
21. June 15, 1998. Department of Physics, The Hong Kong University of Science and Technology, "Mesoscopic Physics in Disordered Superconductors."
22. July 21, 1998. Gordon Research Conference on Correlated Electron Systems, "Normal-State Transport Properties and the Symmetry of Superconducting Order Parameter in Sr₂RuO₄."
23. October 16, 1998. IBM T. J. Watson Research Center, Yorktown Heights, "Normal-State Properties and the Symmetry of Superconducting Order Parameter in Sr₂RuO₄."
24. October 19, 1998. Department of Physics, University of Rochester, "Mesoscopic Physics in Disordered Superconductors."
25. November 17, 1998. The CREST International Workshop on Exactly Aligned Magnetic Field Effects in Low-Dimensional Superconductors, Kyoto, Japan, "Tunneling and Josephson junction studies of the symmetry of superconducting order parameter in Sr₂RuO₄."
26. November 20, 1998. Institute of Solid State Physics, University of Tokyo, "Normal-state properties and the symmetry of superconducting order parameter in Sr₂RuO₄."
27. February 25, 1999. Oak Ridge National Laboratory, "Sr₂RuO₄: Spin-triplet superconductivity and pseudo gap?"
28. April 12, 1999. Department of Physics, Northwestern University, "Sr₂RuO₄: Spin-triplet superconductor?"
29. April 13, 1999. Department of Physics, University of Michigan, "Sr₂RuO₄: Spin-triplet superconductor?"
30. April 16, 1999. Department of Physics, Ohio State University, "Sr₂RuO₄: A Spin-triplet superconductor?"
31. April 17, 1999. Department of Physics, Ohio State University, "The Pseudo gap picture of the normal state of Sr₂RuO₄."
32. April 17, 1999. Department of Physics, Ohio State University, "Mesoscopic physics in disordered superconductors."
33. July 9, 1999. Princeton Material Institute, Princeton University, "Sr₂RuO₄: Spin-triplet superconductivity and pseudo gap?"
34. July 12, 1999. Bell Labs, Lucent Technologies, "Sr₂RuO₄: A spin-triplet superconductor?"
35. August 30, 1999, National High Magnetic Field Lab., "Sr₂RuO₄: Spin-triplet superconductivity and pseudo gap?"

36. September 23, 1999, Department of Physics, University of Pennsylvania, "Mesoscopic physics in disordered superconductors."
37. October 28, 1999, Department of Applied Physics, Stanford University, "Fractional-flux Little-Parks oscillations in $\text{Ag}_{0.7}\text{In}_{0.3}$ cylinders."
38. October 29, 1999, Department of Physics, UC Santa Cruz, "Mesoscopic physics in disordered superconductors."
39. November 22, 1999, Department of Physics, University of California at Berkeley, "Superconductor-insulator transition and $h/4e$ resistance oscillations in $\text{Ag}_{0.7}\text{In}_{0.3}$ cylinders."
40. December 1, 1999, Workshop on the Physics of Ultrathin Films Near the Metal-Insulator Transition, Brown University, "Mesoscopic physics of disordered superconductors."
41. February 23, 2000, The 6th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors ($\text{M}^2\text{S-HTSC-VI}$), Houston, Texas, "Pseudo gap picture of the normal state of Sr_2RuO_4 ."
42. March 6, 2000, Brockhouse Institute for Materials Research, McMaster University, Hamilton, Ontario, Canada, "Mesoscopic physics of disordered superconductors."
43. January 19, 2001, IBM T. J. Watson Research Center, Yorktown Heights, NY, "Tunneling experiments on the pairing symmetry in Sr_2RuO_4 ."
44. January 29, 2001, Naval Research Laboratory, Washington DC, "Tunneling study of Sr_2RuO_4 : The case for unconventional superconductivity"
45. April 6, 2001, Department of Physics, University of Southern California, "Pairing symmetry in Sr_2RuO_4 ."
46. July 16, 2001, University of Utrecht, Utrecht, Netherlands, "Pairing symmetry in Sr_2RuO_4 ."
47. July 23, 2001, ETH, Switzerland, "Pairing symmetry and spin pseudo gap in Sr_2RuO_4 ."
48. November 2, 2001, Los Alamos National Laboratory, "Pairing symmetry in Sr_2RuO_4 ."
49. January 17, 2002, Department of Physics, Yale University, "Physics of nanoscopic superconductors."
50. March 19, 2002, The APS 2002 March Meeting, Indianapolis, IN, "Collective phenomena in Non-perovskite ruthenates: Effects of Ru-Ru bonding and dimensionality."
51. June 4, 2002, Department of Physics, Hong Kong University of Science and Technology, "Nanosopic superconductors."
52. June 12, 2002, Institute of Physics, Chinese Academy of Sciences, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ."
53. June 14, 2002, the First Beijing Forum on the Mechanism of High- T_c Superconductivity, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ."
54. August 13, 2002, The 2002 International Conference on Molecular and Oxide Superconductors (MOS2002), Taiwan, "From unconventional superconductivity to quantum critical fluctuation in ruthenates."
55. August 26, 2002, 23rd International Conference on Low Temperature Physics, Hiroshima, Japan, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ."
56. October 15, 2002, CRTBT, CNRS, Grenoble, France, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ."
57. January 28, 2003, CRTBT, CNRS, Grenoble, France, "From destructive regime to superconductor-normal metal transition in ultrathin cylinders."
58. April 3, 2003, LPS, Universite Paris-Sud, Orsay, France, "From destructive regime to superconductor-normal metal transition in ultrathin cylinders."

59. May 6, 2003, University of Utrecht, Utrecht, Netherlands, "From destructive regime to superconductor-normal metal transition in ultrathin cylinders."
60. May 16, the Institute of Theoretical Physics, ETH, Switzerland, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ."
61. May 21, the Institute of Theoretical Physics, ETH, Switzerland, "From destructive regime to superconductor-normal metal transition in ultrathin cylinders."
62. August 14, 2003, the Institute of Theoretical Physics, Chinese Academy of Sciences, "From destructive regime to superconductor-normal metal transition in ultrathin cylinders."
63. August 14, 2003, the Institute of Physics, Chinese Academy of Sciences, "Tunneling and phase-sensitive studies of the pairing symmetry in Sr_2RuO_4 ."
64. August 14, 2003, the Institute of Physics, Chinese Academy of Sciences, "From unconventional superconductivity to quantum critical fluctuation in ruthenates."
65. August 18, 2003, Osaka University, "Destructive regime and superconductor-normal metal transition in ultrathin cylinders."
66. September 17, 2003, Johns Hopkins University, "Destructive regime and superconductor-normal metal transition in ultrathin cylinders."
67. December 2, 2003, University of Texas (Austin), "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
68. February 23, 2004, Dartmouth College, "Destructive regime and superconductor-normal metal transition in ultrathin cylinders."
69. February 24, 2004, Dartmouth College, "Physics of Sr_2RuO_4 and other ruthenates"
70. International Conference on Physics Education & Research: 4th OCPA Joint meeting of Chinese Physicists World-Wide, June 28 - July 1, 2004. "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
71. June 28, 2004, Department of Physics, Zhejiang University, China, "Physics of Sr_2RuO_4 and other ruthenates"
72. International Conference on Physics Education & Research: 4th OCPA Joint meeting of Chinese Physicists World-Wide, June 28 - July 1, 2004. "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
73. European Physical Society Condensed Matter Division Meeting, Prague, July 19-23, 2004. "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
74. Gordon Research Conference on Superconductivity, Queen's College Oxford, UK, September 19 - 24, 2004. "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
75. "Spin-Triplet Superconductivity and Ruthenate Physics (STSR2004)" from October 25 to 28 2004, Kyoto University, Japan.
76. 2005 APS March Meeting, Los Angeles, CA. March 23, 2005, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
77. February 11, 2005, University of Illinois, Urbana-Champaign, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
78. April 11, 2005, University of Toronto, Toronto, Canada, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
79. 24th International Conference on Low Temperature Physics, August 10-17, 2005, Orlando, Florida, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
80. September 29, 2005, University of Wisconsin, Madison, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."

81. September 30, 2005, University of Wisconsin, Milwaukee, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
82. December 12, 2005, CRTBT, CNRS, Grenoble, France, "Destructive regime and quantum phase transition in ultrathin superconducting cylinders."
83. December 15, 2005, ETH, Zurich, Switzerland, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
84. June 9, 2006, Department of Physics, Hong Kong University of Science and Technology, "Destructive regime and quantum phase transition in ultrathin superconducting cylinders."
85. June 12, 2006, Department of Physics, University Hong Kong, "Superconductivity and quantum phase transition in quasi one-dimensional superconductors."
86. June 15, 2006, Department of Physics, Zhejiang University, China, "Physics and phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
87. June 20, 2006, the Fifth Beijing Forum on the Mechanism of High- T_c Superconductivity, "Phase-sensitive test of odd-parity superconductivity in Sr_2RuO_4 ."
88. June 23, 2006, Institute of Physics, Chinese Academy of Science, "Superconductivity and quantum phase transition in quasi one-dimensional superconductors."
89. July 11, 2006, 8th International conference on materials and mechanism of superconductivity and high temperature superconductors (M²S-HTSC VIII) "Tunneling spectroscopic and phase-sensitive measurements on the pairing symmetry of the bulk and 3K phases of Sr_2RuO_4 ."
90. October 24, 2006, Department of Physics, Tulane University, "Odd-parity superconductivity in Sr_2RuO_4 and physics of ruthenates."
91. October 25, 2006, Department of Physics, Louisiana State University, "Superconductivity and quantum phase transition in quasi one-dimensional superconductors."
92. January 25, 2007, Department of Physics, Department of Physics and Astronomy, University of Delaware. "Destructive regime and the effect of sample topology in quasi-one-dimensional superconductors."
93. February 22, 2007. National Institute of Material Science, Tsukuba, Japan. "Destructive regime and the effect of sample topology in quasi-one-dimensional superconductors."
94. April 19, 2007. DARPA/MTO Carbon Electronics for RF Applications (CERA) Workshop, Arlington, VA. "Graphene electronics: Beyond single layer and beyond GHz."
95. May 21, 2007. The Sixth Beijing Forum on the Mechanism of High- T_c Superconductivity, Taian, China. "Pairing symmetry of Sr_2RuO_4 ."
96. June 10 – 14, 2007. International Workshop on Fluctuations and Phase Transitions in Superconductors, Nazareth, Israel. "Destructive regime and quantum phase transition in quasi one-dimensional superconductors."
97. November 15, 2007. Neel Institute, CNRS, Grenoble, France. "Graphene: A new frontier in condensed matter physics."
98. November 30, 2007. Department of Physics, University of Illinois in Urbana Champaign. "Pairing symmetries of the bulk and the 3-K phases of Sr_2RuO_4 ."
99. December 11, 2007. Kavli Institute for Theoretical Physics, University of California Santa Barbara. "Phase sensitive measurements on Sr_2RuO_4 ."
100. December 11, 2007. Kavli Institute for Theoretical Physics, University of California Santa Barbara. "Pairing symmetry of the 3-K phases of Sr_2RuO_4 ."
101. February 13, 2008. DARPA workshop on Correlated Electronic Oxides (CEO). "Correlated electronic oxides with a non-perovskite crystalline structure and their interfaces."

102. March 14, 2008. APS March meeting. "Conductance fluctuation and tunneling spectroscopy of weakly disordered graphene devices."
103. June 24, 2008. The Seventh Beijing Forum on the Mechanism of High- T_c Superconductivity, Zhangjiajie, China. "Pairing symmetry of Sr_2RuO_4 ."
104. Aug. 28, 2008, Nanoelectronics for RF and Electronics Applications, DARPA-ARL-AMRDEC Workshop, Maryland. "Physics and future device applications of graphene."