# CURRICULUM VITAE

**Xincheng Xie**

Department of Physics
Oklahoma State University
Stillwater OK 74078
Citizenship: USA

Tel: at work (405) 744-5813
at home (405) 372-1078
FAX: (405) 744-6811
E-Mail: xie@solid.phy.okstate.edu

## EDUCATION

| | |
|---|---|
| 1982-1988 | Ph.D. in Physics - University of Maryland. |
| 1978-1982 | B.Sc. in Physics - University of Science and Technology of China, China. |

Thesis Title: Fluctuating Transport in Microstructures.
Ph.D Advisor: Prof. S. Das Sarma

Awards:
(i) Ralph D. Myers Award for Outstanding Academic Achievement During the First Year of Graduate Study. University of Maryland, September 1983.
(ii) The Michael J. Pelczar, Jr. Graduate Award in Recognition of Excellence in Graduate Study. University of Maryland, April 1988.

## PROFESSIONAL EXPERIENCE

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| July 2000 - Present | Professor, Department of Physics, Oklahoma State University. |
| July 1996 - June 2000 | Associate Professor, Department of Physics, Oklahoma State University. |
| August 1991 - June 1996 | Assistant Professor, Department of Physics, Oklahoma State University. |
| 1989 - 1991 | Postdoctoral Research Associate at University of Maryland |
| 1988-1989 | Postdoctoral Research Associate at University of Washington |

## PROFESSIONAL ACTIVITIES

Session chairman in the annual meeting of American Physical Society (1994, 1995 and 1996)

Reviewer of *Physical Review*, *Physical Review Letters*, *Surface Science*, *Physics Letters*, *Solid State Communications*, *Physica*, *NSF* and *DOE*.

## AFFILIATIONS

American Physical Society

## CURRENT RESEARCH FUNDING

1. DOE, "Dephasing and Electronic Transport in Low-Dimensional systems", $150,000 (2001-2003).

2. DOE-EPSCoR, "Electronic Transport in Disordered Two-Dimensional Electron Systems", $150,000 (1999-2001).

## CURRENT RESEARCH GROUP

1. Junren Shi (Ph.D student)
2. Armen Kalashyan (Ph.D student)
3. Ye Xiong (Ph.D student)
4. Harrison Ko (Master student)

## PUBLICATIONS

(1) "Wavevector Scaling, Surface Critical Behavior, and Wetting in the 2D, 3-State Chiral Clock Model," A.L. Stella, X.C. Xie, T.L. Einstein and N.C. Bartelt, Z. Phys. **B67**, 357 (1987).

(2) "Electronic Properties of Quasi-One Dimensional Semiconductor Quantum Wires," W.Y. Lai, S. Das Sarma, X.C. Xie and A. Kobayashi, Proceedings of 18th International Conference on the Physics of Semiconductors (ICPS 18, Stockholm, Sweden, 1986), P.509.

(3) "Calculated Transport Properties of Ultrasubmicrometer Quasi-One Dimensional Inversion Lines," S. Das Sarma and X.C. Xie, Phys. Rev. **B35**, 9875 (1987) *Rapid Communications*.

(4) "Transition From One- to Two- Dimensional Fluctuating Bariable-Range-Hopping Conduction in Microstructures," X.C. Xie and S. Das Sarma, Phys. Rev. **B36**, 4566 (1987) *Rapid Communications*.

(5) "Aharonov-Bohm Effect in the Hopping Conductivity of a Small Ring," X.C. Xie and S. Das Sarma, Phys. Rev. **B36**, 9326 (1987) *Rapid Communications*.

(6) "Conductance Fluctuations in One Dimensional Quasicrystals," S. Das Sarma and X.C. Xie, Phys. Rev. **B37**, (1988).

(7) "Quantum Interference Between Landau Levels in Quasi-One Dimensional Microstructures," X.C. Xie and S. Das Sarma, Solid State Commun. **68**, 697 (1988).

(8) "Aspects of Transport Properties of Quasi-One Dimensional Electron Systems," X.C. Xie and S. Das Sarma, Surface Science **196**, 89 (1988).

(9) "Extended Electronic States in a Fibonacci Superlattice," X.C. Xie and S. Das Sarma, Phys. Rev. Lett. **60**, 1585 (1988).

(10) "Numerical Study of Conductance Fluctuation Based on the Kubo Formula," X.C. Xie and S. Das Sarma, Phys. Rev. **B38**, 3529 (1988).

(11) "Strong-Field Density of States in Weakly Disordered Two-Dimensional Electron Systems," S. Das Sarma and X.C. Xie, Phys. Rev. Lett. **61**, 738 (1988).

(12) "Mobility Edge in a Model One Dimensional Potential," S. Das Sarma, Song He and X.C. Xie, Phys. Rev. Lett. **61**, 2144 (1988).

(13) "Calculated Heat Capacity and Magnetization of Two Dimensional Electron Systems," Q. Li, X.C. Xie and S. Das Sarma, Phys. Rev. B**40**, 1381 (1989) *Rapid Communications.*

(14) "Fractional Quantum Hall Effect with Spin Reversal," X.C. Xie, Yin Guo and F.C. Zhang, Phys. Rev. B**40**, 3487 (1989) *Rapid Communications.*

(15) "Asymmetry in the Hierarchy Formalism of the Fractional Quantum Hall States," F.C. Zhang and X.C. Xie, Phys. Rev. B**40**, 11449 (1989) *Rapid Communications.*

(16) "Localization, Mobility Edges, and Metal-Insulator Transition in a Class of One Dimensional Slowly Varying Deterministic Potentials," S. Das Sarma, Song He and X.C. Xie, Phys. Rev. B**41**, 5544 (1990).

(17) "Finite Size Studies of Semion Systems," X.C. Xie, Song He and S. Das Sarma, Phys. Rev. Lett. **65**, 649 (1990).

(18) "Density of States and Thermodynamic Properties of a Two Dimensional Electron Gas in a Strong External Magnetic Field," X.C. Xie, Q. Li and S. Das Sarma, Phys. Rev. B**42**, 7132 (1990).

(19) "Destruction of Fractional Quantum Hall Effect in Thick Systems," Song He, F.C. Zhang, X.C. Xie and S. Das Sarma, Phys. Rev. B**42**, 11376 (1990) *Rapid Communications.*

(20) "Theory of Pairing in the Anyon Model," X.C. Xie, H.A. Fertig and S. Das Sarma, Modern Phys. Lett. B**5**, 1607 (1990).

(21) "Boson-Fermion Mapping and Off-Diagonal Long-Range Order in Fractional Quantum Hall Effect," X.C. Xie, Song He and S. Das Sarma, Phys. Rev. Lett. **66**, 389 (1991).

(22) "Quantum Hall Effect in Double Quantum Well Systems," Song HE, X.C. Xie, S. Das Sarma and F.C. Zhang, Phys. Rev. B**43**, 9339 (1991) *Rapid Communications.*

(23) "Spin-Singlet Laughlin-Halperin Type Wavefunctions for the Quantum Hall States," X.C. Xie and F.C. Zhang, Modern Phys. Lett. B**5**, 471 (1991).

(24) "Collective Mode of Semion Systems," X.C. Xie, Song He and S. Das Sarma, International Journal of Modern Physics, B**5**, 1607 (1991).

(25) "Anyons, Boundary Constraint, and Hierarchy in Fractional Quantum Hall Effect," Song He, X.C. Xie and F.C. Zhang, Phys. Rev. Lett. **68**, 3460 (1992).

(26) "Fractional Quantum Hall Effect in Thick Layers and Double Quantum Well Systems," Song He, X.C. Xie and S. Das Sarma, Surf. Sci. **263**,87 (1992).

(27) "Quantized Hall Effect and Quantum Phase Transitions in Coupled Two Layer Electron Systems," Song He, S. Das Sarma and X.C. Xie, Phys. Rev. B**47**, 4394 (1993).

(28) "Elementary Excitations in a Finite Fractional Quantum Hall Droplet,"X.C. Xie, Song He and S. Das Sarma, Phys. Rev. B**47**, 15942 (1993).

(29) "Magneto-Optical Spectra of Strongly Correlated Electrons in Nonparabolic Quantum Dots,"X.C. Xie, S. Das Sarma and Song He, Phys. Rev. B**48**, 8454 (1993).

(30) "FIR Spectroscopy of the Intra-Landau Level Excitations of Strongly Correlated Quantum Dots,"X.C. Xie, S. Das Sarma and Song He, Surf. Sci. **305**, 606 (1994).

(31) "Transport Properties of One Dimensional Interacting Fermions,"Q.P. Li and X.C. Xie, Phys. Rev. B. **49**, 8273 (1994).

(32) "Theoretical Study of Energy Gaps and Collective Excitations in Fractional Quantum Hall Effect,"X.C. Xie, Phys. Rev. B**49**, 16833 (1994) *Rapid Communications.*

(33) "Phase Diagram Study in Half Integral Fractional Quantum Hall Effect,"Gautam Dev, X.C. Xie and B.A. Mason, Phys. Rev. B**51** 10905 (1995).

(34) "Electron Localization in a 2D System with Random Magnetic Flux, "D.Z. Liu, X.C. Xie, S. Das Sarma and S.C. Zhang, Phys. Rev. B**52** 5858 (1995).

(35) "Time-Resolved Exciton Luminescence in GaN Grown by Metalorganic Chemical Vapor Deposition, "W. Shan, X.C. Xie, and J.J. Song, Appl. Phys. Lett. **67**, 17 (1995).

(36) "Skyrmion Excitation in Quantum Hall System, "X.C. Xie and S. He, Phys. Rev. B**53**, 1046 (1996).

(37) "Weak Field Phase Diagram for an Integer Quantum Hall Liquid, "D.Z. Liu, X.C. Xie and Q. Niu, Phys. Rev. Lett. **76**, 975 (1996).

(38) "Pseudospin SU(2) Symmetry Breaking, Charge Density Wave and Superconductivity in the Hubbard Model, "S.Q. Shen and X.C. Xie, J. Phys. C. **8**, 4805 (1996).

(39) "Transition from Integer Quantum Hall State to Insulator, "X.C. Xie, D.Z. Liu, B. Sundaram, and Q. Niu, Phys. Rev. B**54**, 4966 (1996).

(40) "Study of Scaling in the Fractional Quantum Hall Effect, "X.C. Xie, D.Z. Liu and J.K. Jain, Mod. Phys. Lett. B**10**, 801 (1996).

(41) "The Differences Between Random Potential and Random Magnetic Field Localization in Quasi-One-Dimensional Systems, "W.L. Chan, X.R. Wang and X.C. Xie, Phys. Rev. B**54**, 11213 (1996).

(42) "Pseudospin Symmetry, Peisrls Instability, and Charge Density Wave, "S.Q. Shen and X.C. Xie, Physica B**230-232**, 1061 (1997).

(43) "Negative Magnetoresistance in the Nearest- Neighbor Hopping Conduction, "X.R. Wang and X.C. Xie, Europhys. Lett. **38**, 55 (1997).

(44) "In-Plane Magnetic Field Induced Kosterlitz-Thouless Type Metal Insulator Transition in Coupled Double Quantum Wells, "D.Z. Liu and X.C. Xie, Phys. Rev. B**55**, 15824 (1997).

(45) "Dynamics of photoexcited carriers in AlxGa1-xN/GaN double heterostructures, "W. Shan, S. Xu, B.D. Little, X.C. Xie, J.J. Song, G.E. Bulman, H.S. Kong, M.T. Leonard, and S. Krishnankutty, J. Appl. Phys. **82** 3158 (1997).

(46) "Intrinsic Exciton Transitions in GaN, "W. Shan,a A.J. Fischer, S.J. Hwang, B.D. Little, R.J. Hauenstein, X.C. Xie, J.J. Song, D.S. Kim, B. Goldenberg, R. Horning, S. Krishnankutty W.G. Perry, M.D. Bremser, and R.F. Davis, J. Appl. Phys. **83**, 455 (1998).

(47) "Quasiparticle Lifetime of Electron-electron Interactions for Two-Dimensional Electron Gases with magnetic Field, "B. Hu, T. Kawamura, X.C. Xie and S. Xu, Superlattices and Microstructures **23**, 71 (1998).

(48) "A New Liquid Phase and Metal-Insulator Transition in Si MOSFETs, "S. He and X.C. Xie, Phys. Rev. Lett. **80**, 3324 (1998).

(49) "Kosterlitz-Thouless Type Metal-Insulator Transition of 2D Electron Gas in a Random Magnetic Field, "X.C. Xie, X.R. Wang and D.Z. Liu, Phys. Rev. Lett. **80**, 3563 (1998).

(50) "First Principle Theory of Inelastic Currents in a Scanning Tunneling Microscope, "K. Stokbro, Ben Y.K. Hu, C. Thirstrup, and X.C. Xie, Phys. Rev. B. **58**, 8038 (1998).

(51) "Giant Magnetoresistance in Non-magnetic Granular Material, "X.R. Wang, S.C. Ma and X.C. Xie, Europhys. Lett. **45**, 368 (1999).

(52) "Metal-Insulator Transition in a Multilayer System with a Strong Magnetic Field, "X.R. Wang, C.Y. Wong, and X.C. Xie, Phys. Rev. B**59**, R5277 (1999) *Rapid Communications*.

(53) "Meta-Percolation and Metal-Insulator Transition in Two Dimensions, "J.R. Shi, S. He and X.C. Xie, submitted to Europhys. Lett.

(54) "The Edge-State Theory of Integer-Quantum-Hall-Effect to Insulator Transition, "X.R. Wang it et al., submitted to Phys. Rev. Lett.

(55) "A Droplet State in an Interacting Two-Dimensional Electron System, "J.R. Shi, S. He and X.C. Xie, Phys. Rev. B**60**, R13950 (1999) *Rapid Communications*.

(56) "Metal-Insulator Transition in Colossal Magnetoresistance Materials, "V.N. Smolyaninova, X.C. Xie, F.C. Zhang, M. Rajeswary, R.L. Greene, and S. Das Sarma, Phys. Rev. B**62**, 3010 (2000).

(57) "Orbital Orderings and Two Ferromagnetic Phases in Low Doped $La_{1-x}Sr_xMnO_3$, "S.Q. Shen, R.Y. Gu, Q.H. Wang, Z.D. Wang, and X.C. Xie, Phys. Rev. B**62**, 5829 (2000).

(58) "Quantum AC Transport Through Coupled Quantum Dots, "Z.S. Ma, J.R. Shi and X.C. Xie, Phys. Rev. B**62**, 15352 (2000).

(59) "Harmonic Generation for AC Nonlinear Response, "Z.S. Ma and X.C. Xie, Phys. Rev. B**63**, 125310 (2001).

(60) "Dephasing and Metal-Insulator Transition, "J.R. Shi and X.C. Xie, Phys. Rev. B**63**, 045123 (2001).

(61) "Percolative Conductivity and Critical Exponents in Mixed-Valent Manganites, "Ye Xiong, S.Q. Shen and X.C. Xie, Phys. Rev. B**63**, R140418 (2001) *Rapid Communications*.

(62) "Dephasing Effect in Photon-Assisted Resonant Tunneling through Quantum Dots, "J.R. Shi, Z.S. Ma and X.C. Xie, to be published in Phys. Rev. B, (2001) *Rapid Communications*.

(63) "The Droplet State and the Compressibility Anomaly in 2D Electron Systems, "J.R. Shi and X.C. Xie, submitted to Phys. Rev. Lett.

## INVITED TALKS, SEMINARS AND COLLOQUIA

(1) "Persistent Current in Mesoscopic Ring,"University of Washington, 1989.

(2) "Theory of Pairing in the Anyon Model," University of Cincinnati, 1989.

(3) "Anyons and Superconductivity," University of Maryland, 1990.

(4) "Anyons and Superconductivity,"State University of New York at Stony Brook, 1990.

(5) "Anyons and Superconductivity," California State University at Los Angeles, 1991.

(6) "Density of States and Thermodynamic Properties of a Two Dimensional Electron Gas in a Strong External Magnetic Field," Oklahoma State University, 1991.

(7) "Boson-Fermion Mapping and Off-Diagonal Long-Range Order in Fractional Quantum Hall Effcet," University of Maryland, 1991.

(8) "Numerical Studies of Anyon Systems," Houston Conference on Fractional Statistics, 1991.

(9) "Anyons and Superconductivity," University of Oklahoma, 1991.

(10) "Thermodynamic properties of 2D Electron Gas in a Strong Magnetic Field," University of Cincinnati, 1991.

(11) "Quantum Transport in Microstructures," University of Illinois at Urbana-Champaign, 1991.

(12) "Anyons and Superconductivity,"Wichta State University, 1993.

(13) "Three Lectures in Summer School in China, "CCAST China, 1993.

(14) "Anyons and Superconductivity,"Beijing University, China, 1993.

(15) "Optical Properties of Quantum Dots,"International Conference on the Electronic Properties of Two-Dimensional Systems, 1993.

(16) "Theoretical study of energy gaps and collective excitations in Fractional Quantum Hall Effect,"Univ. of Science and Technology of Hong Kong, 1994.

(17) "Theoretical study of energy gaps and collective excitations in Fractional Quantum Hall Effect,"Chinese University of Hong Kong, 1994.

(18) "Three Lectures in Summer School in Chinese Academy of Science,"1994.

(19) "Electron Localization in a 2D System with Randon Magnetic Flux,"22nd Midwest Solid State Theory Symposium, October 1994.

(20) "Electron Localization in a 2D System with Randon Magnetic Flux,"University of Texas at Austin, 1995.

(21) "Skyrmion Excitations in Quantum Hall System, "Demark Technical University, 1995.

(22) "Phase Diagram in Quantum Hall System, "University of Houston, 1995.

(23) "Phase Diagram in Quantum Hall System, "SUNY at Stony Brook, 1995.

(24) "Metal-Insulator Transition in 2D Electron Gas with Magnetic Field, "University of Missouri at Kansas City, 1995.

(25) "Metal-Insulator Transition in 2D Electron Gas with Magnetic Field, "Oklahoma State University, 1995.

(26) "Phase Diagram in Quantum Hall System, "University of Oklahoma, 1995.

(27) "Phase Diagram in Quantum Hall System, "Kansas State University, 1996.

(28) "Transition from Integer Quantum Hall State to Insulator, "Hong Kong University of Science and Technology, 1996.

(29) "Skyrmion Excitations in Quantum Hall System, "Hong Kong University of Science and Technology, 1996.

(30) "Transition from Integer Quantum Hall State to Insulator, "CCAST China, 1996.

(31) "Transition from Integer Quantum Hall State to Insulator, "University of Kansas, 1996.

(32) "Phase Diagram of Two-dimensional Electron Gas with Magnetic Field, "McGill University, 1996.

(33) "Phase Diagram of Two-dimensional Electron Gas with Magnetic Field, "Waterloo University, 1996.

(34) "Kosterlitz-Thouless Type Transition in Quantum Wells, "University of Oklahoma, 1997.

(35) "Transition from Integer Quantum Hall State to Insulator, "University of Cincinnati, 1997.

(36) "Kosterlitz-Thouless Type Transition in Quantum Wells, "Nanjing University, China, 1997.

(37) "Metal-Insulator Transition in Si MOSFETs, "University of Oklahoma, 1998.

(38) "Metal-Insulator Transition in Si MOSFETs, "University of Cincinnati, 1998.

(39) "Metal-Insulator Transition in Si MOSFETs, "Workshop on *Strongly Correlated Electronic Systems*, Taiwan, 1998.

(40) "Metal-Insulator Transition in Si MOSFETs, "Nanjing University, China 1998.

(41) "Kosterlitz-Thouless Type Metal-Insulator Transition in 2D Electron Systems, "National Tsing Hua University, Taiwan, 1998.

(42) "Metal-Insulator Transition in Si MOSFETs, "Workshop on *Quantum Phase Transition*, Beijing, China, 1998.

(43) "Kosterlitz-Thouless Type Metal-Insulator Transition in 2D Electron Systems, "Workshop on *Quantum Phase Transition*, Beijing, China, 1998.

(44) "Phase Diagram of Two-dimensional Electron Gas with Magnetic Field, "Workshop on *Quantum Phase Transition*, Beijing, China, 1998.

(45) "Metal-Insulator Transition in Si MOSFETs, "Conference of *Disorder and Interactions in Quantum Hall Systems*, Institute for Theoretical Physics, University of california at Santa Barbara, 1998.

(46) "Metal-Insulator Transition in 2D Electron Systems, "McGill University, Canada, 1998.

(47) "Metal-Insulator Transition in 2D Electron Systems, "University of Sherbrook, Canada, 1998.

(48) "Metal-Insulator Transition in 2D Electron Systems, "Lawrence Berkeley Laboratories, 1998.

(49) "Metal-Insulator Transition in 2D Electron Systems, "Penn State University, 1998.

(50) "Metal-Insulator Transition in 2D Electron Systems, "Oak Ridge National Laboratories, 1999.

(51) "Droplet State and Meta-percolation in 2D Electron Systems, "Chinese Sinica, 1999.

(52) "Droplet State and Meta-percolation in 2D Electron Systems, "University of Cincinnati, 1999.

(53) "Dephasing and Metal-Insulator Transition, "University of Tennessee, 2000.

(54) "Droplet State and Meta-percolation in 2D Electron Systems, "Fudan University, Shanghai, China, 2000.

(55) "Droplet State and Meta-percolation in 2D Electron Systems, "University of Science and Technology of China, 2000.

(56) "Dephasing and Metal-Insulator Transition, "Institute of Physics, Chinese Sinica, 2000.

(57) "Dephasing and Metal-Insulator Transition, "Hong Kong Baptist University, 2000.

(58) "Droplet State and Meta-percolation in 2D Electron Systems, "Conference of "Physics Research and Education in the 21st Century", Hong Kong, 2000.

(59) "Dephasing and Metal-Insulator Transition, "University of Oklahoma, 2000.