

Curriculum Vitae

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Date of Birth: 03.31.1970.
Place of birth: Calcutta, India.
Citizenship: India.

Current Position:

.Associate Professor-E at Saha Institute of Nuclear Physics, Kolkata, India.

Education:

University of Maryland at College Park: January 1996 - August 2001,
Doctor of Philosophy in Physics.
Ph.D. Thesis Advisor: Professor Victor M. Yakovenko.

University of Maryland at College Park: September 1994 - January 1996,
M.S. in Physics.

Saha Institute of Nuclear Physics, Calcutta: August 1993 - July 1994,
Post M.Sc degree.

Indian Institute of Technology, Kharagpur: August 1988 - July 1993,
Master of Science in Physics.

Teaching Experiences:

Summer 2001: Instructor for Physics 263 at the University of Maryland at College Park.

Fall 1994 to Spring 1996: Teaching assistant of Physics courses PHYS121, PHYS263, PHYS272 (undergraduate 100 and 200 level Physics courses) and PHYS731 (Graduate Solid State Physics) at the University of Maryland at College Park.

Research Experiences:

January 1996 - August 2001: Graduate thesis research with Professor Victor M. Yakovenko at the University of Maryland at College Park.

September 2001 – August 2004: Postdoctoral Research with Professors Steven M. Girvin and Subir Sachdev at Yale University.

Sept. 2004-July 2005: Postdoctoral Associate with Professor Yong Baek Kim at University of Toronto.

August 2005- October 2005: Faculty Fellow at Harish Chandra Research Institute, Allahabad, India.

Honors and Awards:

Institute Silver Medal in Physics from I.I.T Kharagpur in 1993.

Professional Activities

Reviewer for APS journals Physical Review A, B and Physical Review Letter.

Grant Proposal reviewer for NSF, USA.

Research Interests:

Physics of Strong Correlations in ultracold atoms.

Quantum Phase Transitions.

Physics of Graphene.

Unconventional superconductivity.

Quantum Hall effect.

Research Presentations:

- *Spin-Hall effect*, Session-chair talk presented at Gordon Research conference on Correlated Electron Systems at Mount Holyoke, Massachusetts, June 2006.
- *Superfluid-Insulator transition of two species ultracold atoms in an optical lattice*; Invited talk present at Boston University, December 2004, University of Sherbrooke, May 2005; Contributed talk at APS March Meeting 2005 at Los Angeles.
- *Mott insulator to superfluid transition of ultracold atoms near a Feshbach resonance*; Invited talks at University of Maryland, April, 2004 and University of Toronto September 2004.
- *Mott insulators in strong electric fields*, Invited talks at University of Cincinnati, May 2002, University of Maryland at College Park, April 2003 and contributed talk at APS March meeting May 2003.
- *Pairing symmetry in quasi-one-dimensional organic superconductors*: Talk at Physics Department, Yale University, September 2001.
- *Fractional spin of the edge states in unconventional superconductors*, Poster presented at the SNS 2001, Chicago, May 2001.
- *Edge states and determination of pairing symmetry in superconducting Sr₂RuO₄*, Contributed talk at APS meeting, Seattle, March 2001.
- *Spin/charge quantum Hall effects and edge states in superconducting Sr₂RuO₄*, Poster presented at the GRC on correlated electron systems, New Hampshire, June 2000.
- *Edge electron states for quasi-one-dimensional organic conductors in the magnetic-field-induced spin-density-wave phases*, Contributed talk at the March Meeting of the American Physical Society, Minneapolis, March 2000.
- *Effective action and collective modes in quasi-one-dimensional spin-density-wave systems*, Contributed talk Contributed talk at APS meeting, Minneapolis, March 2000.
- *Hopf invariant for long-wavelength skyrmions in quantum Hall systems for integer and fractional fillings*, Contributed talk at APS, Los Angeles, 1998.

Publications and Preprints

- S. Bhattacharjee and K. Sengupta, *Tunneling Conductance of graphene NIS junctions*, **cond-mat/0607489** (submitted to **Phys. Rev. Lett.**)
 - A. Das, K. Sengupta, D. Sen and B.K. Chakrabarti, *Infinite-range Ising ferromagnet in time-dependent transverse field: dynamics near quantum critical point*, **cond-mat/0606137** (submitted to **Phys. Rev. B**).
 - K. Sengupta, R. Roy, and M. Maiti, *Spin-Hall effect in triplet chiral superconductors and graphene*, **cond-mat/0604217** (Accepted for publication in **Phys. Rev. B**).
 - K. Sengupta, N. Dupuis and P. Majumdar, *Bose-Fermi mixture in an optical lattice*, **cond-mat/0603162**.
 - S. Isakov, S. Wessel, R. Melko, K. Sengupta and Yong Baek Kim, *Valence Bond solids and unconventional quantum criticality in hard-core Bosons on the Kagome lattice*, **cond-mat/0602430** (submitted to **Phys. Rev. Lett.**).
 - K. Sengupta, S. Isakov, and Yong Baek Kim, *Superfluid-Insulator transitions of bosons on Kagome lattice at non-integer fillings*, **Phys. Rev. B 73, 245103 (2006)**.
- Jean-Sebastien Bernier, K. Sengupta and Yong Baek Kim, *Biaxial nematic phase of two dimensional disordered rotor models*, **cond-mat/0510290** (Accepted for publication in **Phys. Rev. B**).
- A. Issacson, M-C Cha, K. Sengupta and S. M. Girvin, *Superfluid-Insulator transitions of two-species bosons in an optical lattice*, **Phys. Rev. B 72, 184507 (2005)**.
 - L. Balents, L. Bartosch, A. Burkov, S. Sachdev and K. Sengupta, *Competing order and non-Landau-Ginzburg-Wilson criticality in (Bose) Mott insulators*, **Prog. Theor. Phys. Suppl. 160, 314 (2005)**.
 - K. Sengupta and Yong Baek Kim, *One dimensional itinerant ferromagnets with Heisenberg symmetry and the ferromagnetic quantum critical point*, **Phys. Rev. B 71, 174427 (2005)**.
 - K. Sengupta and N. Dupuis, *Mott insulator to superfluid transition in the Bose-Hubbard model: a strong-coupling approach*, **Phys. Rev. A 71, 033629 (2005)**.
 - L. Balents, L. Bartosch, A. Burkov, S. Sachdev, and K. Sengupta, *Competing orders II: A spin on the dimmer model*, **Phys. Rev. B 71, 144508 (2005)**.

- L. Balents, L. Bartosch, A. Burkov, S. Sachdev, and K. Sengupta, *Putting competing orders in their place near a Mott transition*, **Phys. Rev. B** **71**, **144509** (2005).
- K. Sengupta and N. Dupuis, *Mott insulator to superfluid transition of ultracold bosons in an optical lattice near a Feshbach resonance*, **Europhys. Lett.** **70**, **586** (2005).
- K. Sengupta, S. Powell, and S. Sachdev, *Quench dynamics across quantum critical points*, **Phys. Rev. A** **69**, **053616** (2004).
- P. Fendley, K. Sengupta, and S. Sachdev, *Competing density-wave orders in a one-dimensional hard-boson model*, **Phys. Rev. B** **69**, **075106** (2004).
- H.-J. Kwon, K. Sengupta, and V. M. Yakovenko, *Fractional ac Josephson effect in p- and d-wave superconductors*, [Eur. Phys. J. B](#) **37**, **349-361** (2004).
- Hyok-Jon Kwon, K. Sengupta, and Victor M. Yakovenko, *Fractional ac Josephson effect in unconventional superconductors*, **Low Temperature Physics** **30**, **613-619** (2004).
- K. Sengupta and N. Dupuis, *Field-induced spin-density-wave phases in TMTSF organic conductors: quantization versus non-quantization*, **Phys. Rev. B** **68**, **094431** (2003).
- H.-J. Kwon, K. Sengupta, and V. M. Yakovenko, *Theoretical prediction of the fractional ac Josephson effect in p- and d-wave superconductors*", [Brazilian Journal of Physics](#) **33**, **653-658** (2003).
- Hyok-Jon Kwon, Victor M. Yakovenko, and K. Sengupta, *How to detect edge electron states in (TMTSF)₂X and Sr₂RuO₄ experimentally*, **Synthetic Metals** **27**, **133** (2003).
- Subir Sachdev, K. Sengupta, and S. M. Girvin, *Mott insulators in strong electric fields*, **Phys. Rev. B** **66**, **075128** (2002).
- K. Sengupta, H.-J. Kwon, and V. M. Yakovenko, *Edge states and determination of pairing symmetry in superconducting Sr₂RuO₄*, **Phys. Rev. B** **65**, **104504** (2002).
- K. Sengupta and N. Dupuis, *Spin-density-wave instabilities in the organic conductor (TMTSF)₂ClO₄: Role of anion ordering*, **Phys. Rev. B** **65**, **035108** (2002).
- K. Sengupta, I. Zutic, H.-J. Kwon, V. M. Yakovenko, and S. Das Sarma, *Mid-gap states and pairing symmetry of quasi-one-dimensional organic superconductors*, **Phys. Rev. B** **63**, **144531** (2001).

- K. Sengupta, H.-J. Kwon, and V. M. Yakovenko, *Edge electron states for quasi-one-dimensional organic conductors in the magnetic-field-induced spin-density-wave phases*, **Phys. Rev. Lett.** **86**, 1094 (2001).
- K. Sengupta and Victor. M. Yakovenko, *Hopf invariant for long-wavelength skyrmions in quantum Hall systems for integer and fractional fillings*, **Phys. Rev. B** **62**, 4586 (2000).
- K. Sengupta and N. Dupuis, *Effective action and collective modes in quasi-one-dimensional spin-density-wave systems*, **Phys. Rev. B** **61**, 13493 (2000).
- S. Wu, S. G. Kaplan, M. Quijada, K. Sengupta, and H. D. Drew, *Improved Circular Polarizer for far-infrared light-pipe systems*, **Review of Scientific Instruments** **66**, 5559 (1995).
- K. Sengupta and S. K. Ghatak, *Role of band mixing in superconductivity in two-dimensional systems*, **Indian J. Phys.** **69A**, 203 (1995).
- K. Sengupta and S. K. Ghatak, *The effect of hybridization on superconductivity in quasi-two-dimensional systems*, **Physics Letters A** **186**, 419 (1994).

References

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