Curriculum Vitae

Personal Information:

Name: Debabrata Sinha

Designation: Assistant Professor

Affiliation: Department of Physics,

Ramakrishna Mission Vidyamandira,

Belur Math, Howrah, West Bengal 711202

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PhD and Postdoc:

PhD : TIFR Centre for Interdisciplinary Sciences (TCIS),
Hyderabad, India
Advisor: Prof. Surajit Sengupta

Thesis Title: Effects of Topological Defects in Quantum Mesoscopic Systems and in Quantum Solids (Submitted in November, 2015)
Date of Defence: 8th June, 2016

Visiting Scholar in Univ. the Lorraine, France (October'15-January'16) under Prof. Bertrand Berche

Post Doctoral Fellow at Indian Association for the Cultivation of Science, Kolkata (from Oct'16-Sept'18).

Mentor: Prof. Krishnendu Sengupta

Post Doctoral Fellow at Indian Insitute of Technology, Kharagpur (from Feb'19-August'21)

Mentor: Prof. Arghya Taraphder

Post Doctoral Fellow at Institute of Mathematical Sciences, Chennai (August'21-Feb'23)

Mentor: Prof. Mukul Laad

Research Interest and Working Area:

I am a theoretical condensed matter physicist and interested on the following topics:

1. Quantum Transport, Andreev tunneling, Josephson effect.

2. Effect of disorder in linear and nonolinear magnetoconductivity in topological materials

3. Optical conductivity in disorder superconductors.

PUBLICATIONS:

I have published fifteen papers in the following journals:

PRB Rapid (01), PRB (05), JPCM (01), EPL (01), CAP (01), EPJB (03), J. Phys. A: Math. Theor (01), MPLA (01), AJP(01)

15. Giant nonlinear response due to unconventional oscillation in nodal-line semimetals, by D. Sinha and A. Taraphder, Phys. Rev. B 104, 245141 (2021)

14. A new look at quantal time evolution by A. Bhattacharyya, J. K. Bhattacharjee and D. Sinha, American Journal of Physics 89, 627 (2021)

13. Anomalous Josephson current and quantum anomaly in inversion asymmetric Weyl semimetals by D. Sinha , Phys. Rev. B 103, 125147 (2021)

12. Chirality-dependent planar Hall effect in inhomogeneous Weyl semimetals, by S. Ghosh, D. Sinha, S. Nandy and A. Taraphder, Phys. Rev. B Rapid Com. 102, 121105 (2020).

11. Josephson effect in type-I Weyl semimetals by D. Sinha, Phys. Rev B 102, 085144 (2020)

10. Josephson junctions of Weyl and multi-Weyl semimetals *by* K Kulikov, D Sinha, YM Shukrinov, K Sengupta, Phys. Rev. B 101, 075110 (2020)

9. Transport across junction of a Weyl and a multi-Weyl semimetal *by* D. Sinha and K. Sengupta, Phys. Rev. B 99, 075153 (2019)

8. Spin transport and spin pump in graphene-like materials: Effect of tilt in Dirac cones *by* D. Sinha, EPJB 92, 61 (2019)

7. Andreev tunnelling and Josephson current in light irradiated Graphene, *by* D. Sinha and S. Kar, Current Applied Physics, 18, 9, 1087 (2018)

6. Spin texture of an irradiated warped topological insulator surface, *by* D. Sinha EPL 115 (2016) 37003

5. Quantum oscillation and wave packet revival in disclinated graphene structure *by* D. Sinha and B. Berche , Eur. Phys. J. B (2016) 89: 57

4. Bound states and persistent currents in presence of torsion and Rashba spin orbit coupling
by D. Sinha, Eur. Phys. J. B (2015) 88: 83

3. Out of equilibrium plasticity dynamics and the annealing of supersolidity in solid 4He by D. Sinha, S. Sengupta, C. Dasgupta, O. T. Valls, J. Phys.: Condens. Matter 25 (2013)

295601

2. Non-commutative quantum mechanics in three dimensions and rotational symmetry by D. Sinha, B. Chakraborty, F. G. Scholtz J. Phys. A: Math. Theor.45 (2012) 105308

1. A Family of noncommutative geometries by D. Sinha, P. R. Giri, Modern Physics Letters A Vol. 26, No. 29 (2011) 2213

ACADEMIC JOB: Refeering in the following journals

Nanotechnology
Euro Physics Lett (EPL)
Applied Physics Letter (APL)

School Participate:

1. ICTS Condensed Matter Program 2011, IISc, Bangalore
2. Frustrated Magnetism 2017, IMSc, Chennai
3. Frontiers of Stastical Physics meeting in ISI, Kolkata, 2018