INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

GUWAHATI - 781039

Curriculum Vitae

1.	**Name in full (in capital letters)**	**SAURABH BASU**
2.	**Institution & Department**	**Indian Institute of Technology Guwahati** **Department of Physics**
3.	**a) Designation**	**Senior Professor**
	b) Field of specialisation	**Theoretical Condensed Matter Physics**
4.	**Date of birth**	**10/09/1969**

5. Summary of educational qualifications:

Sl . No	Name of the Board / University / Institution and Department	Examination / Degree / Diploma passed	Discipline/ Specialization	Year of Passing	Distinction / Class / Division and CPI / Percentage
4.	**Indian Institute of Technology, Bombay**	**M.Sc**	**Physics**	**1993**	**1st Class**
5	**Indian Institute of Technology, Kanpur**	**PhD**	**Condensed Matter Physics (Theory)**	**1999**	**1st Class**

6. Particulars of present and past employments in chronological order, starting with the present one:

Sl. No.	Organisation / Institute	Position held	Nature of duties / work	Date of joining	Date of leaving
1.	**IIT Guwahati**	**Professor (senior)**	**Teaching, Research, Administration**	**28.12.2021**	
1.	**IIT Guwahati**	**Professor**	**Teaching, Research, Administration**	**29.07.2012**	**-**
2.	**IIT Guwahati**	**Associate Professor**	**Teaching, Research**	**10.4.2007**	**28.07.2012**

3.	**IIT GUwahati**	**Assistant Professor**	**Teaching, Research**	**23.7.2003**	**9.4.2007**
4.	**BITS Pilani**	**Lecturer**	**Teaching, Research**	**22.4.2002**	**22.7.2003**
5.	**Queens University, Canada**	**Post Doctoral Fellow**	**Teaching Research**	**1.2.2000**	**31.3.2002**
6.	**Tata Institute of Fundamental Research (TIFR)**	**Post Doctoral Fellow**	**Research**	**1.1.1999**	**31.1.2000**

7. Summary of Research & Development Activities

No. of PG projects guided	No. of Ph.D. thesis guided		
	Completed	On-going	Sponsored
22(M.Sc), 18 B. Tech. & 1 (M.Tech)	**15**	**5**	**5**
Number of Journal publications (peer reviewed): **114**			

8. Administrative activities and Experience

Sl No.	**Name of the Post**	**Tenure**	**Responsibility**
1.	**Hostel Warden**	**2004-2005**	**Hostel Affairs**
2.	**Chairman of M.Sc Entrance Examinations**	**2005-2006**	**Conduct of JAM exam for admission into the M.Sc programme at IITs**
3.	**Prof. in-charge Training and Placement**	**2009-2012**	**Coordinate placement related activities for students at IIT Guwahati**
4.	**HoD, Physics**	**2012-2015**	**Chair of the Department of Physics, IIT Guwahati**
5.	**Director, Public and Staff Grievances**	**2016**	**Matters related to grievances of the employees at IIT Guwahati**
6.	**Dean, Outreach Education Programme**	**2016-2019**	**Outreach to schools and colleges in the entire North-East**
7.	**Director, IIIT Bhagalpur**	**2018-2019**	**Administrative matters and recruitment at IIIT Bhagalpur.**

9. Teaching Experience

I have been teaching since 2000, while I was a post doc at Queens University, Canada. During then I taught a course on Advanced Statistical Mechanics. I have developed the syllabi for a number of specialized courses in Condensed Matter Physics, Statistical Mechanics, Quantum Mechanics etc. Besides, I have taught 8 online courses in the Swayam-Moocs platform. They:

(i) Advanced Condensed Matter Physics
(ii) Advanced Quantum Mechanics and Applications
(iii) A brief course on Superconductivity
(iv) Numerical Methods and Simulation techniques for Scientists and Engineers
(v) Quantum Hall Effect
(vi) Topology and Condensed Matter Physics
(vii) Statistical Physics of non-interacting and interacting systems
(viii) Elements of Modern Physics

Another course on Topology has been approved by NPTEL, IIT Madras for which recording is yet to begin. Two of the courses have already selected for re-run.

As a part of my regular teaching duties, I have taught almost all core courses of the Physics department, IITG. They include:

(1) Introductory courses to the first year B.Tech students (PH101 and PH102)
(2) Electromagnetic Theory
(3) Solid State Physics
(4) Quantum Mechanics
(5) Advanced Quantum Mechanics
(6) Statistical Mechanics
(7) Classical Mechanics
(8) Mathematical Physics
(9) Condensed Matter Physics
(10) Magnetism and Superconductivity
(11) Superconductivity
(12) Many Body Theory
(13) Nanoscience and Nanotechnology
(14)Physics Laboratory Courses for B.Tech. and M.Sc. students

10. Academic Achievements: Guidance of PhD students, Sponsored Projects, Research Publications, Seminars and Conferences attended etc.

Name of the Student	Thesis Title / Area
Dr. Amal Medhi	**Role of interlayer couplings in bilayer superconductors: A variational Monte Carlo Study (Completed)**
Dr. Poulumi Dey	**Disorder and spin imbalance induced exotic phases in weakly coupled s-wave superconductors (Completed)**
Dr. Krishna Kanti Dey	**Autonomous Motion driven by catalytic nanoparticles(Completed)**
Dr. Sangeetha N.S.	**Coexistence of charge density waves in rare-earth compounds (CMP-Theory and expt) (Completed)**
Dr. Apurba Barman	**Theory of bosonic superfluidity in optical lattices (CMP Theory) (Completed)**
Dr. Sudin Ganguly	**Quantum Conductance in spin-orbit coupled devices: A focus on transport in Graphene (Completed)**
Dr. Kajwal Patra	**Investigation of structural dynamics and Allosteric Mechanisms of SAMHD1 protein complex via Molecular Dynamics studies (Completed)**

Dr. Susmita Ghosh	Development of a new class of enhanced kinetic sampling methods for Biomolecular simulations (Completed)
Dr. Sk. Noor Nabi	Quantum Phase of a spin-1 Bose gas in an optical lattice: A focus on Mean field and perturbative approaches. (Completed)
Ms. Priyadarshini Kapri	Quantum transport in Normal-Superconducting junction devices (Completed)
Ms. Sunayana Dutta	Dynamics of ultracold Bosons in optical lattice Potential (Completed)
Ms. Priyanka Sinha	Transport in Graphene based heterostructures (Completed)
Ms. Shilpi Roy	Phases and Critical analysis of quantum Systems in presence of quasiperiodic potential (Completed)
Mr. Sayan Mandal	Band engineered topological Phase transitions (Completed)
Mr. Mijanur Islam	Investigation of Spin and Charge persistent current characteristics and topological aspects of pseudospin-1 Transport and $\alpha - t_3$ systems (Completed)
Mr. Dipendu Halder	Non-Hermitian systems: Role of PT symmetry (ongoing)
Mr. Koustav Roy	Floquet dynamics of topological insulators (ongoing)
Ms. Srijata Lahiri	Higher order topological insulators (ongoing)
Ms. Shreya Debnath	Skyrmionic lattices and Altermagnets (ongoing)
Mr. Gourab Paul	Many Body effects in non-Hermitian Systems
Dr. Kuntal Bhattacharyya National Post Doctoral Fellow	Electron-Phonon coupling effects on topological phases of matter (ongoing)

Details of sponsored Projects (From Govt. of India)

Title	Sponsoring Agency	Sponsored Amount
Phases of the interacting Bose Gas: Simulating Quantum Phenomena at large length scales	CSIR, INDIA	Rs. 14.40000/- (Completed)
Inhomogeneous Superconductivity in Pauli Limited Superconductors	DST, INDIA	Rs. 10,23,200/- (Completed)
Physics of the pseudogap phase – possible routes- A BCS-BEC crossover and a kinetic energy driven pairing sceraio	CSIR, INDIA	Rs. 9.82,000/- (Completed)
Role of Spin-Orbit Coupling in spintronic devices: Search for Topological State of Matter	SERB, INDIA	Rs. 22,00,000/- (Completed)
Quantum Spin Liquids, Dirac Materials and their topological connections	CSIR, INDIA	Applied for

Selected Invited Conference/Seminar

Invited talk at NIT Meghalaya, April 2025

Invited talk at SRM University, Amravati, February 2025
Invited talk at LNMIIT Jaipur, February 2025
Invited talk at BITS Goa, January 2025
Invited talk at IACS, Kolkata, January 2025
Invited Talk at PRL, Ahmedabad September 2024
Invited series of Lectures at IIT Gandhinagar September 2024
Invited talk at IISER Kolkata April 2024
Invited talk at IIT Mandi October 2023
Invited talk at ICFAI Tripura February 2023
Invited talk at EQMAT in IIT Roorkee, October 2022
Invited talk at NCMFP in Amity University, India in July 2022
Invited talk at IIT Jodhpur, India January 2022
Invited talk at Amity University, India in July 2022
Invited talk at Adamas University, India in November 2021
Invited talk at IISER Kolkata in February 2020
Invited talk at Tokyo Tech, India Nov 2020
Invited talk at CMPA, Manipal September 2020
Invited talk at Science Day Celebrations, NIT Nagaland, February, 2020
Invited talk at Tokyo Tech Japan, November 2019
Invited talk at NIT Nagaland, October, 2019
Invited series of Lectures at IIT Gandhinagar, September, 2019
Invited series of lectures at BITS Goa, July, 2019
Invited talk at IISER Kolkata, February, 2019
Invited talk at IIT Patna, December, 2018
Invited talk at NIT Arunachal, July, 2017
Invited Talk at IIT Patna on the eve Science Day in February, 2017
Invited seminar in IUPAP conference in Guwahati 2015
Gordon Research Conference in Hong Kong 2015
Invited Seminar at IISER Kolkata in November 2012
Gordon Research Conferences, in South Hadley, USA 2012
Invited Public lecture in Institute of Microengineering and Nanoelectronics (IMEN), University of Kebangsaan Malasyia
SCES, in Univ. of Cambridge, UK

Gordon Research Conferences, in South Hadley, USA
Invited Colloquium for PhD students in Gauhati University
Talk at Indian Condensed Matter Physics, ICMP in Mahabaleshwar, India
Invited talk at Discussion meeting on Statistical mechanics and Condensed matter Physics' at IIT Guwahati, India
TPSC seminar at Institute of Mathematical Sciences (IMSC), Chennai
TPSC Seminar at IIT Kanpur
Invited talk at G. Goethe Institute, Frankfurt, Germany
Invited talk at ICTP, Italy
TPSC Seminar, November 2006 at Saha Institute of Nuclear Physics (SINP), Kolkata and SN Bose National Center for Basic Sciences (SNBNCBS), Kolkata
TPSC Colloquium, September 2006 at Delhi University and IIT Roorkee, India
TPSC– North East Consortium Meeting" in February, 2004 at IIT Guwahati, India

11. List of Publications (Only Journal publications & Book Chapters)

Sl. No.	Authors	Paper Title	Journal Name	Year	**Volume**	Page No.
1	**Saurabh Basu** and A. Singh	Gap States in a doped Mott Hubbard insulator	Pramana Journal of Physics (Letters)	1995	44	L-77
2	P. Sen, **Saurabh Basu** and A. Singh	Gap states, local moments and magnetic dynamics in a Mott-Hubbard Antiferromagnet doped with static impurities,	Physical Review B	1996	53	10381(R)
3	**Saurabh Basu** and A. Singh	Self consistent study of impurity doped Mott-Hubbard insulator	Physical Review B	1996	53	6406
4	**Saurabh Basu** and A. Singh	Two Magnon Raman scattering in a Mott-Hubbard Antiferromagnet	Physical Review B	1996	54	6356
5	**Saurabh Basu** and A. Singh	Hopping disorder, magnon energy renormalization and two-magnon Raman scattering in an Antiferromagnet	Physical Review B	1997	55	12338
6	**Saurabh Basu**	Disorder Effects upon the Raman spectrum in an Antiferromagnet	Phys. Stat. Sol. (b)	2001	25	379

7	**Saurabh Basu**, P.W. Leung and R.J. Gooding	Enhanced Bound State formation via Stripe-Like Hopping anisotropies	Physical Review B	2001	63	100506(R)
8	**Saurabh Basu**, P.W. Leung	A model of pairing enhanced by stripelike correlations	Physica B	2002	53	312
9	**Saurabh Basu,** A.C. Jones and R. J. Gooding	Increasing superconducting Tc's by a factor of 1000 with large hopping anisotropies in two-dimensional t-J model systems	Physical Review B	2002	66	144507
10	**Saurabh Basu** and RJ. Gooding	Examining a Square to a triangular lattice interpolation: bound states in two dimensional t-J models	Physica Status Solidi (B)	2005	242	1431
11	C.Y. Kadolkar and **Saurabh Basu**	Phase diagram of the *t-J* model on a honeycomb lattice	Physical Review B	2005	76	235122
12	**Saurabh Basu**	**Gap function in an anisotropic superconductor**	Physica B	2006	380	315
13	A. Medhi, **Saurabh Basu** and C.Y. Kadolkar	Quantum Monte Carlo study of the Hubbard model doped with nonmagnetic impurities	Physica B	2006	378	430
14	P. Dey and **Saurabh Basu**	Hopping anisotropies – a candidate for BCS-BEC crossover	Physical Review B	2007	75	174512
15	A. Medhi, **Saurabh Basu** and C.Y. Kadolkar	Non-magnetic impurities in a two-leg ladder	Journal of Applied Physics	2007	101	09D504
16	A.Medhi, **Saurabh Basu** and C.Y. Kadolkar	Coexistence of magnetism and superconductivity in a *t-J* bilayer	Physical Review B	2007	76	235122
17	**Saurabh Basu**, C.Y. Kadolkar and N. Goveas	Two electrons in a honeycomb lattice	Modern Physics Letters B	2007	21	391
18	P. Dey, C.Y. Kadolkar and **Saurabh Basu**	BCS @ 50: Derivation of gap equations in different lattice geometries	ICTP preprint (refereed)	2007	64	IC/2007/64
19	A. Medhi, **Saurabh Basu** and C.Y. Kadolkar	Stability of the Gutzwiller projected BCS wavefunction in *t-J* bilayers	Physica C	2007	451	13
20	A. Medhi, **Saurabh Basu** and C.Y. Kadolka	Variational Monte Carlo study of magnetic correlations in bilayer *t-J* model	Indian Journal of Physics	2008	82	25
21	P. Dey and **Saurabh Basu**	d-wave correlations for anisotropic superconductors	Indian Journal of Physics	2008	82	289
22	A. Agarwal, K.K. Dey, A. Paul, **Saurabh Basu** and A. Chattopadhyay	Chemical locomotives based on polymer supported catalytic nanoparticles	Journal of Physical Chemistry (Letters)	2008	112	2797
23	P. Dey and **Saurabh Basu**	Role of disorder in inducing a BCS-BEC crossover	Journal of Physics, Condensed Matter	2008	20	485205

24	K.K. Dey, D. Sharma, **Saurabh Basu** and A. Chattopadhyay	Veering the motion of a chemical locomotive in a liquid,	The journal of Chemical Physics (Also in Virtual Journal of Nanoscale Science & Technology)	2008	129	121101
25	P. Dey and **Saurabh Basu**	BCS-BEC Crossover, potential vs. kinetic energy driven pairing for anisotropic superconductors	Physica B	2008	403	1026
26	P. Dey, **Saurabh Basu** and R. Kishore	Some clues in the investigation of the FFLO phase in superconductors	Journal of Physics Condensed Matter	2009	21	355062
27	A.Medhi, **Saurabh Basu** and C.Y. Kadolkar	Phase diagram for a t-J bilayer: role of interlayer couplings	European Physical Journal B	2009	72	583
28	A. Medhi and **Saurabh Basu**	Importance of interlayer pair tunneling: A variational perspective	Physica C	2010	471	1
29	K.K. Dey, B. Panda, A. Paul, **Saurabh Basu**, and A Chattopadhyay	Catalytic gold nanoparticle driven pH specific chemical locomotion	Journal of Colloid and Interface Science	2010	348	335
30	P. Dey, **Saurabh Basu** and R. Kishore	Current and Spin correlations in FFLO state of a s-wave superconductor	Journal of Physics: Conference series	2011	273	012072
31	P. Dey, D. Sarkar, A. Khan and **Saurabh Basu**	Participation ratio and Fidelity analyses as tools to study BCS-BEC crossover	European Physical Journal B	2011	81	95
32	P. Dey and **Saurabh Basu**	Effect of harmonic confinement on correlation studies of a spin polarized s-wave superconductor	Physica C	2011	471	463
33	K.K. Dey, K.K. Senapati, P. Phukan, **Saurabh Basu** and A. Chattopadhyay	Stable magnetic chemical locomotive with Pd Nanoparticle incorporated Ferromagnetic Oxide	The Journal of Physical Chemistry C	2011	115	12708
34	N.S. Sangeetha, A. Thamizhavel, C.V. Tomy**, Saurabh Basu,** S. Ramakrishnan and D Pal	Magnetic ordering and crystal field effects in $R_2Ir_3Sn_5$ (R = La-Nd, Gd-Tm) system,	Physical Review B	2011	84	064430
35	P. Dey, A. Khan, **Saurabh Basu** and B. Tanatar,	A comparison of harmonic confinement and disorder in inducing localization effects in a superconductor	International Journal of Modern Physics: Conference series	2012	11	127
36	A. Barman and **Saurabh Basu**	Interplay of optical potential and condensate properties for bosons in different optical lattice geometries,	Journal of Physics B, : At Mol. Opt. Phys,	2012	45	105303

37	A. Khan, **Saurabh Basu** and S. W. Kim	Effect of disorder in BCS-BEC crossover	Journal of Physics B: At Mol. Opt. Phys	2012	45	135202
38	N. S. Sangeetha, A. Thamizhavel, C. V Tomy, **Saurabh Basu**, A. Ramakrishnan and D. Pal	Interplay of superconductivity and charge density wave ordering in pseudoternary alloy compounds: $Lu_2Ir_3(Si_{1-x}Ge_x)_5$, $Lu_2(Ir_{1-x}Rh_x)_3Si_5$ and $(Lu\{_{1-x}\}Sc\{_x\})_2Ir_3Si_5$,	Physical Review B	2012	86	024524
39	A. Khan, **Saurabh Basu** and B. Tanatar	Disorder induced BCS-BEC crossover in an ultracold Fermi gas	J. Supercond Nov. Magn	2013	26	191
40	K. K. Dey, S. Bhandari, D. Bandypadhyay**,** **Saurabh Basu** and A. Chattopadhyay**,**	The pH taxis of an intelligent catalytic microbot	Small	2013	9	1916
41	A. Barman and **Saurabh Basu**	The Phase diagram of bosons in a tripartite lattice – emergence of exotic density ordered phases	J. Phys. B: At. Mol. Opt. Phys**.**	2013	46	125303
42	A. Barman, S. Dutta, A. Khan and **Saurabh Basu**	Understanding the Bose glass phase via a percolation scenario	Eur. Phys. J B	2013	86	308
43	S.K. Das, A. Khan and **Saurabh Basu**	Electron pairing and evidence of a BCS-BEC crossover in d-wave superconductors	Physica B	2013	410	99
44	A. Khan**, Saurabh Basu** and B. Tanatar	Investigating dirty crossover through fidelity susceptibility and density of states	Int. J. Mod. Phys. B,	2014	14	1450083
45	A. Barman and **Saurabh Basu**	Phase diagram of trapped bosons in a kagome lattice – application of inhomogeneous mean field theory	J. Phys. B: At. Mol. Opt. Phys.	2014	47	025302
46	A. Barman and **Saurabh Basu**	Phase diagram of correlated bosons with harmonic confinement	JPS, Conf. Proc.	2014	3	016007
47	A. Barman and **Saurabh Basu**	Phase diagram of multi-component bosonic mixtures: emergence of mixed superfluid and insulating phases,	J. Phys. B: At. Mol. Opt. Phys.	2015	48	055301
48	S. Ganguly and **Saurabh Basu**	Anisotropic quantum transport in two dimensions – hints of emergence of a metallic behavior	Eur. Phys. J B	2015	88	396
49	S. Dutta, A. Barman, A. Khan and **Saurabh Basu**	Tunneling dynamics of correlated bosons in a double well potential	Eur. Phys. J B,	2015	88	139
50	N.S. Sangeetha, A. Thamizhavel, C.V. Tomy**, Saurabh Basu**, A.M. Awasthi, P. Rajak, S. Bhattacharya, S.	Multiple charge-density-wave transitions in single crystalline, $Lu_2Ir_3Si_5$	Physical Review B	2015	91	205131

	Ramkrishnan and D. Pal					
51	Sudin Ganguly and **Saurabh Basu,**	Interplay of the Rashba spin-orbit coupling and disorder in the conductance properties of four terminal junction devices	Eur. Phys. Journal B	2016	89	103
52	Sk. Noor Nabi and **Saurabh Basu**	Percolation analysis of a disordered spinor Bose gas	J. Phys. B: At. Mol. Opt. Phys.	2016	49	125301
53	P. Kapri and **Saurabh Basu**	Tunneling conductance study of a metal superconducting junction in the presence of Rashba spin orbit coupling	Eur. Phys. Journal B	2017	90	33
54	Sudin Ganguly, **Saurabh Basu** and Santanu K. Maiti	Interface sensitivity on spin transport through a three-terminal graphene nanoribbon	Superlattices and Microstructures	2018	1201	650
55	Sudin Ganguly, **Saurabh Basu** and Santanu K. Maiti	Controlled engineering of spin-polarized transport properties in a zigzag graphene nanojunction	Euro. Phys. Lett.	2018	124	17005
56	Sudin Ganguly, **Saurabh Basu** and Santanu K. Maiti	Unconventional charge and spin dependent transport properties of a graphene nanoribbon with line-disorder	Euro. Phys. Lett.	2018	124	57003
57	Sk Noor Nabi and **Saurabh Basu**	Quantum phases of a spin-1 ultracold Bose gas with three-body interactions	Euro. Phys. Lett.	2018	121	46002
58	Priyadarshini Kapri, Priyanka Adhikary, Subham Sinha and **Saurabh Basu**	Controlled thermoelectric response of a tunable Rashba coupled metal-insulator-superconductor junction	Physica E	2018	99	67
59	Priyadarshini Kapri and **Saurabh Basu**	Tunable refrigeration properties of nano-scale Rashba coupled junction devices	Physica E	2018	103	383
60	Priyadarshini Kapri and **Saurabh Basu**	Andreev reflection across a Kane-Mele normal-superconductor nano-junction	Euro. Phys. Lett.	2018	124	17002
61	Priyadarshini Kapri and **Saurabh Basu**	Thermopower generation and thermoelectric cooling in a Kane-Mele normal-insulator -superconductor nano-junction	Euro. Phys. Lett.	2019	125	47003
62	Sunayana Dutta, **Pankaj Kumar Mishra**, Budhaditya Chatterjee and **Saurabh Basu**	Dynamics of interacting bosons in a double-well potential	Euro. Phys. Lett.	2018	124	30002
63	Sunayana Dutta, Marios C Tsatsos, **Saurabh Basu** and Axel U. J. Lode	Management of the Correlations of Ultracold Bosons in Triple Wells	New J. Phys.	2019	21	053044
64	Priyanka Sinha, Sudin Ganguly and **Saurabh Basu**	Analytic and numeric	Physica E	2018	103	314

		computation of edge states and conductivity of a Kane-Mele nanoribbon				
65	Sk. Noor Nabi and **Saurabh Basu**	Effects of an attractive three-body interaction on a spin-1 Bose Hubbard model	Laser Physics	2019	29	075501
66	P. Sinha and **Saurabh Basu**	**Study of edge states and conductivity in spin-orbit coupled bilayer graphene**	Eur. Phys. Journal B	2019	92	207
67	S. Koley and **Saurabh Basu**	Orbital Selectivity and Magnetic Ordering in Fe intercalated Dirac Semimetal Bi2Se3	J. Magn. Magn Materials	2020	499	166294
68	S. Dutta, S.K. Noor Nabi and **Saurabh Basu**	Ultracold gases in presence of time-dependent synthetic gauge field	Eur. Phys. J B	2019	93	3
69	S. N. Nabi and **Saurabh Basu**	Effects of an attractive three-body interaction on a spin-1 Bose Hubbard model	Laser Physics	2019	29	075501
Book Chapters						
70	P. Dey and **Saurabh Basu**	**Disordered superconductors: A simple model manifesting pseudogap and BCS-BEC crossover**	Condensed Matter Theories	2010	World Scientific	24
71	K.K. Dey, P.K. Choudhury and **Saurabh Basu**	**Catalytic Nanoparticle driven Self-Propulsion of Polymer Microspheres: Evolution and Opportunities**	Nanoscale Spectrocopy and Applications'	2012	CRC Press	
72	O.E. Alon, **Saurabh Basu** et al.	**Exploring Many-Body Physics with Bose-Einstein Condensates**	In: Nagel W., Kröner D., Resch M. (eds) High Performance Computing in Science and Engineering ' 18. Springer	2019	Book Chapter	89
73	**Saurabh Basu**	**Special topics in Condensed Matter Physics**	American Institute of Physics (AIP)	2022	**Book (Published)**	
74	**Saurabh Basu**	**Quantum Hall effect: a Herald to topological Insulators**	Cambridge University Press (in print)	2023	**Book (Publihsed)**	
75	**Saurabh Basu**	**Modern Perspectives in the study of electronic systems**	Institute of Physics (IOP)	2022	**Book (Published)**	
76	**Saurabh Basu**	**Symmetry, Topology and Condensed Matter Physics**	Springer	2023	**Book (Published)**	
77	**Saurabh Basu**	**Magnetic Phenomena in Solids**	Springer	2024	Proposal approved (Book under preparation)	

78	**Saurabh Basu**	**Statistical Physics of non-Interacting and Interacting Systems**	Cambridge Scholar	2024	Proposal approved (Book under preparation)	
79	**Saurabh Basu**	**A Concise Introduction to Superconductivity**	Springer Nature	2024	Proposal approved (Book under preparation)	

Sl. No.	Authors	Title of the paper	Journal	Vol & page no.	Year
80	M. Islam, S. Koley and **Saurabh Basu**	Transport properties of $LaNiO_2$	Eur. Phys. Journal B	**94,** 187	2021
81	S. Mondal & **Saurabh Basu**	Vanishing of the quantum spin Hall phase in a semi-Dirac Kane Mele model	Phys. Rev. B	**105**, 235409	2022
82	S. Mondal & **Saurabh Basu**	Topological phases of a semi-Dirac Chern insulator in presence of extended range hopping	Phys. Rev. B	**105**, 235441	2022
83	S. Roy, S. Chattopadhyay, T. Mishra and **Saurabh Basu**	Critical analysis of the reenetrant localization transition in a one dimensional dimerized quasiperiodic lattice	Phys. Rev. B	**105**, 214203	2022
84	P. Sinha, S. Murakami, and **Saurabh Basu**	Landau levels and magneto-optical transport properties of a semi-Dirac system	Phys. Rev. B	**105**, 205407	2022
85	S. Koley and **Saurabh Basu**	Superconductivity induced by Ag intercalation in Dirac semimetal Bi_2Se_3	Computational Materials Science	**210**, 110989	2022
86	S. Roy, T. Mishra, B. Tanatar and **Saurabh Basu**	Re-entrant localization transition in a quasiperiodic chain	Phys. Rev. Lett.	**126**, 106803	2021
87	P. Sinha, S. Murakami, and **Saurabh Basu**	Quantum Hall studies of a semi-Dirac nanoribbon	Phys. Rev. B	**102**, 085416	2020
88	S. Mondal, P. Kapri, B. Dey, T.k. Ghosh and **Saurabh Basu**	Topological phase transition induced by band structure modulation in a Chern insulator	J. Phys. Condens. Matter	**33**, 205504	2021

89	S. Mondal & **Saurabh Basu**	Evolution of the Berry phase and topological properties in models for merging Dirac cones	Physica E	**138**, 115048	2021
90	S. Koley and **Saurabh Basu**	Intercalated phosphorene for improved spintronic applications	IEEE Transactions on Magnetics	**57,** 1300107	2020
91	S. Roy and **Saurabh Basu**	Interplay of off-diagonal random disorder and quasiperiodic potential in a one-dimensional Aubry-Andre model	Euro. Phys. Lett.	**128**, 47005	2019
92	P. Kapri and **Saurabh Basu**	Thermopower generation and thermoelectric cooling in a Kane-Mele normal-insulator - superconductor nano-junction	Euro. Phys. Lett.	**125**, 47003	2019
93	S. Roy, Sk. Noor Nabi, **Saurabh Basu**	Critical and Topological phases of Dimerized Kitaev chain in presence of quasiperiodic potential	Physical Review B	**107,** 014202	2023
94	S. Mondal and **Saurabh Basu**	Topological features of the Haldane model on a dice lattice: Flat-band effect on transport properties	Physical Review B	**107,**035421	2023
95	S. Mondal, S. Ganguly and **Saurabh Basu**	Topology and applications of 2D Dirac and semi-Dirac materials	Physical Science Reviews (de Gruyter)	Book Chapter	2023
96	S. Mondal and **Saurabh Basu**	Band engineered bilayer Haldane model: Evidence of multiple topological phase transitions	Phys. Rev. B	108, 045307	2023
97	Sk. Noor Nabi, S. Roy and **Saurabh Basu**	Phase properties of interacting bosons in presence of quasiparticle disorder	Annals of Physics	**448**, 169171	2022

98	D. Halder, S. Ganguly and **Saurabh Basu**	Properties of the non-Hermitian SSH model: role of $\mathcal{PT}$ symmetry	J. Phys. Condes. Matter	**35,** 105901	2022
99	D. Halder, **Saurabh Basu**	Topological properties of a non-Hermitian two orbital model	arXiv:2304.12723	arXiv preprint	2023
100	S. Lahiri and **Saurabh Basu**	Higher order topology in a Creutz ladder	J. Phys. Condes. Matter	**35**, 425902	2023
101	S. Lahiri and **Saurabh Basu**	Higher order topology in a band deformed Haldane model	Scientific Reports	**14**, 1880	2024
102	K. Roy and **Saurabh Basu**	Topological properties of a periodically driven Creutz ladder	Phys. Rev. B	**108**,045415	2023
103	M. Islam, T. Biswas and **Saurabh Basu**	Role of magnetic field on the electronic properties of an α-T3 ring	Phys. Rev. B	**108**, 085 403	2023
104	M. Islam and **Saurabh Basu**	Spin and charge persistent currents in a Kane Mele α-T3 quantum ring	Journal of Physics: Condensed Matter	**36**, 135301	2023
105	S. Roy, **Saurabh Basu**, and I. Khyamovich	Ergodicity-breaking phase diagram and fractal dimensions in long-range models with generically correlated disorder	Phys. Rev. B	**111**, 104203	2025
106	M. Islam and **Saurabh Basu**	Screw dislocation in a Rashba spin-orbit coupled - Aharonov–Bohm quantum ring	Scientific Reports	**14**, 11232	2024
107	K. Roy, S. Roy, and **Saurabh Basu**	Floquet analysis of a driven Kitaev chain in presence of a quasiperiodic potential	Scientific Reports	**14**, 206603	2024
108	M. Islam, K. Bhattacharya and **Saurabh Basu**	Electron-phonon coupling induced topological phase transition in an α-T3	Phys. Rev. B	**110,** 045426	2024

		- Haldane-Holstein model			
109	M. Islam and **Saurabh Basu**	Properties of an {\alpha}-T3 Aharonov-Bohm quantum ring: Interplay of Rashba spin-orbit coupling and topological defect	arXiv:2310.14169		
110	D. Halder, R. Thomale and **Saurabh Basu**	Circuit realization of a two-orbital non-Hermitian tight-binding chain	Phys. Rev. B	**109,** 115407	2024
111	D. Halder and **Saurabh Basu**	Parsing skin effect in a non-Hermitian spinless BHZ-like model	J. Phys. Condens. Matter	**36**, 335301	2024
112	D. Halder, S. Lahiri and **Saurabh Basu**	Competing topological phases in a non-Hermitian time-reversal symmetry broken Bernevig-Hughes-Zhang model	Phys. Rev. B	**110,** 115132	2024
113	K. Roy and **Saurabh Basu**	Multiple Floquet Majorana modes in Rashba nanowires under single and multi-frequency driving protocols	Phys. Rev. B	**110,** 165403	2024
114	S. Lahiri and **Saurabh Basu**	Wannier charge center, spin resolved bulk polarization, and corner modes in a strained quantum spin Hall insulator	Phys. Rev. B	**109,** 115424	2024
115	K. Bhattacharya, S. Lahiri, M. Ismal and **Saurabh Basu**	Holstein polaron in a pseudospin-1 quantum spin Hall system: first and second order topological phase transitions	Phys. Rev. B	**101**, 235432	2024
116	K. Roy, K. Gogoi and **Saurabh Basu**	Topological characterization of a non-Hermitian ladder via Floquet non-Bloch theory	Phys. Rev. B	**111**, 115424	2025
117	S. Debnath and **Saurabh Basu**	Studying magnon band topology through low-energy magnon excitations: role of anisotropic	J. Phys. Condens. Matter	**37**, 085303	2024

		Dzyaloshinskii-Moriya interaction			
118	S. Debnath and **Saurabh Basu**	Magnons on a dice lattice: topological features and transport properties	Phys. Rev. B	**111,** 155418	2025
119	M. Islam and **Saurabh Basu**	Conductance properties of an α-T3 Corbino disk	J. Phys. Cond. Matt.	**37**, 205302	2025
120	D. Halder and **Saurabh Basu**	Controlled probing of localization effects and non-Hermitian Aubry Andre model via topolectrical circuits	arXiv:2501.04502	Under review in Phys. Rev. B	2025
121	Koustav Roy, Gourab Paul, Debika Debnath,Kuntal Bhattacharyya, and **Saurabh Basu**	Floquet-engineered diode performance in a Majorana-quantum dot Josephson junction	arXiv: 2503.07428	Under review in Phys. Rev. B	2025

12. Awards & Honours

1. **NSERC fellowship for 3 years for Post Doctoral Fellowship at Kingston, Canada (1999-2001)**
2. **ICTP fellowship for 2 months summer visit to ICTP, Italy in 2005**
3. **SBF Fellowship for 2 months Winter Visit to Goethe Institut. Frankfurt, Germany in 2007**
4. **TUBITAK Fellowship for 2 months to visit Bilkent University in 2011**
5. **TUBITAK Fellowship for 1 year to visit Bilkent University in 2020 (Could not avail due to Covid)**