

Curriculum vitae

Subhash Chandra Mahapatra

Associate Professor,

Theoretical physics group, Dept. of Physics,
NIT Rourkela

Contact Information

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Research Interests

- Research interests in string theory and high energy physics:
Applications of the AdS/CFT correspondence in strongly coupled systems - holographic QCD, entanglement measures, thermalization, quantum quenches, condensed matter systems.
- Research interests in black holes:
Hairy black hole solutions and their properties, thermal behaviour and phase transitions.

Education

- *Ph.D in Physics* (2010-2015) [Thesis - 1st category]
Thesis title: Applications of the gauge/gravity duality: Superconductivity, optics and entanglement thermodynamics,
Thesis supervisor: Prof. Tapobrata Sarkar,
Institute: Indian Institute of Technology Kanpur,
Place: Kanpur, Uttar Pradesh, India.
Grade(CPI): 9.33 (Course Work).
- *M.Sc. in Physics* (2008-2010)
Thesis title: Falicov-Kimball Model and Metal-insulator transition,
Thesis supervisor: Prof. Ishwar Singh Tyagi,
Institute: Indian Institute of Technology Roorkee,
Place: Roorkee, Uttarakhand, India.
Grade(CPI): 8.63.
- *B.Sc. honours in Physics* (2005-2008)
Institute: University of Delhi,
Place: New Delhi, India.
Marks: 82.45 %.

Research Experience

- *Postdoctoral research fellow* (2017 - 2018)
Theoretical physics group,
Indian Institute of Science Education and Research,
Bhopal, Madhya Pradesh, India.

- *Postdoctoral research fellow* (2016 - 2017)
Theoretical physics group,
KU Leuven,
Leuven, Belgium.
- *Postdoctoral research fellow* (2015 - 2016)
Theoretical Physics group,
The Institute of Mathematical Science Chennai,
Tamil Nadu, India.
- *Project Scientist* (July 2015 - September 2015)
Department of Physics,
Indian Institute of Technology Kanpur,
Kanpur, Uttar Pradesh, India.

About my bibliography

- My publications can be consulted via
<http://inspirehep.net/author/profile/Subhash.Mahapatra.1>, and
<http://scholar.google.co.in/citations?user=vfuYbZoAAAAJ&hl=en>
- I have co-authored 36 publications in peer reviewed journals. As a single author I have published 5 papers. In addition, I have co-authored 1 peer-reviewed Proceedings.
- My papers are published in **JHEP** (14x, IF = 5.88), **Phys.Rev.D** (13x, IF = 5.3), **Phys. Dark Univ.** (1x, IF = 5.3), **Phys.Rev.E** (3x, IF = 2.53), **Euro.Phys.Jour.C** (2x, IF = 4.59), **Phys.Lett.B** (1x, IF = 4.77), **Euro.Phys.Jour.A** (1x, IF = 2.8). My single author papers are published in **JHEP** (3x, IF = 5.88), **Euro.Phys.Jour.C** (2x, IF = 4.77). IF = current impact factor.
- Total citations ~ 1200 , i10-index ~ 28 , h-index ~ 21 .

Conferences and Workshop

- Name: Extreme QCD,
Organiser: Istituto Nazionale di Fisica Nucleare (INFN),
Place & date: University of Pisa, Pisa-Italy, 26th - 28th June 2017.
- Name: Excited QCD,
Organiser: European Organization for Nuclear Research (CERN),
Place & date: Sintra-Portugal, 7th - 13th May 2017.
- Name: Strings 2015,
Organiser: International Centre for Theoretical Sciences (ICTS),
Place & date: Bangalore-India, 22nd - 27th June 2015.
- Name: Spring School on superstring theory and related topics,
Organiser: International Centre for Theoretical Physics (ICTP),
Place & date: Trieste-Italy, 25th March - 2nd April 2015.
- Name: Indian String Meeting,
Organiser: The Institute of Mathematical Sciences Chennai (IMSc),
Place & date: Puri-India, 15th - 20th December 2014.
- Name: Advanced String School,
Organiser: Institute of Physics (IOP),
Place & date: Bhubaneswar-India, 22nd - 28th September 2014.
- Name: Summer school on string theory,
Organiser: Instituto Superior Tecnico (IST),
Place & date: Lisbon-Portugal, 14th - 19th July 2014.

- Name: Mathematica summer school on Theoretical Physics,
Organiser: Centro de Fisica do Porto,
Place & date: Porto-Portugal, 21st - 26th July 2014.
- Name: National String Meeting,
Organiser: Harish-Chandra Research Institute (HRI),
Place & date: IIT Kharagpur-India, 22nd - 27th December 2013.
- Name: Thermalization From Glasses to Black Holes,
Organiser: International Centre for Theoretical Sciences (ICTS),
Place & date: Bangalore-India, 10th - 21st June 2013.
- Name: Indian String Meeting,
Organiser: Harish-Chandra Research Institute (HRI),
Place & date: Puri-India, 16th - 21st December 2012.
- Name: Advanced String School,
Organiser: Institute of Physics (IOP),
Place & date: Bhubaneswar-India, 12th - 18th October 2012.

Oral Presentation

- Conference: ,
Title: *"Thermal entropy of the quark-antiquark pair from dynamical holographic EMD model"*,
Organiser: Istituto Nazionale di Fisica Nucleare (INFN),
Place & date: Pisa-Italy, 26th June 2017.
- Conference: Excited QCD,
Title: *"Thermal entropy of the quark-antiquark pair and entanglement entropy from dynamical holographic QCD"*,
Organiser: European Organization for Nuclear Research (CERN),
Place & date: Sintra-Portugal, 11th May 2017.
- Seminar
Title: *"Applications of the AdS/CFT correspondence: Entanglement entropy and QCD"*,
Place & date: KU Leuven Kulak-Belgium, 2nd March 2017.
- Seminar
Title: *"Logarithmic Black Hole Entropy Corrections and Holographic Rényi Entropy"*,
Place & date: Gent University-Belgium, 26th November 2016.
- Seminar
Title: *"Black hole thermodynamics, Phase Transition and Quasinormal modes"*,
Place & date: The Institute of Mathematical Sciences Chennai-India, 18th April 2016.
- Seminar
Title: *"Holographic superconductors and Optics"*,
Place & date: Indian Association for the Cultivation of Science Kolkata-India, 25th April 2015.
- Conference: Indian String Meeting,
Title: *"Generalized Superconductors and Holographic Optics-II "*,
Organiser: The Institute of Mathematical Sciences Chennai,
Place & date: Puri-India, 18 December 2014.
- Conference: National String Meeting,
Title: *"Generalized Superconductors and Holographic Optics-I "*,
Organiser: Indian Institute of Technology Kharagpur,
Place & date: Indian Institute of Technology Kharagpur-India, 23 December 2013.

Advisor:
PhD

S. No.	Name	Starting date	Expected end date	Status
1	Supragran Priyadarshinee	01-2019	05-2023	Graduated
2	Bhaskar Shukla	08-2019	05-2024	On-going
3	Siddhi Jena	01-2020	01-2025	On-going
4	Jasper Nongmaithem	06-2024	05-2025	On-going

Master degree (M.Sc and Int. M.Sc): Total = 21

S. No.	Name	Starting date	Expected end date	Status
1	Hardik Bohra, Krishna Jalan, Vishal Das, Swejyoti Mitra	05-2018	05-2019	Completed
2	Gosala reddy, Sachiraj Mishra, Tanya Tripathy	05-2019	05-2020	Completed
3	Arijit Maiti, Jayesh Jain, Salman Husain	05-2020	05-2021	Completed
4	Gupta Bhavesh Arjun, Satyam Verma	05-2021	05-2022	Completed
5	Jyotirmoy Barman, Rahul Satapathy, Narendra S	05-2022	05-2023	Completed
6	Jasper Nongmaithem, Aprpa Bhattacharjee, Shravani Sardeshpande	05-2023	05-2024	Completed
7	Owais Riyaz, Nikesh Lilani, Dilpreet Sandhu	05-2024	05-2025	on-going

List of Sponsored Projects

S. No.	PI /CO-PI	Sponsoring agency	Starting year	End year	Title	Total Amount	Status
1	PI	Department of Science and Technology India	03-2018	03-2023	Strongly Coupled QCD via Holography In a Strong Magnetic background	35 Lakhs	Completed
2	PI	Science & Engineering Research Board India	03-2023	03-2027	Quark-gluon plasma observables in a strong magnetic background	22 Lakhs	On-going

Accolades

- Ranked among the top 2% of scientists in the 2024 Stanford University single-year rankings.
- Awarded Inspire Faculty Fellowship by the Department of Science and Technology (DST) India, for the period 03-2018 to 02-2023.
- Awarded the PDM postdoctoral fellowship from the KU Leuven University.
- Awarded the postdoctoral fellowship from the Institute of Mathematical Sciences, Chennai.
- Awarded international travel grant from the Department of Science and Technology India (DST) to participate in an international scientific conference in July 2014.
- Awarded the Senior Research Fellowship from the Council for Scientific and Industrial Research (CSIR) in July 2012.
- Scored 98.89 Percentile in Joint Entrance Screening Test (JEST-2010).
- Top 1% in Graduate Aptitude test for engineering (Gate-2010).
- Awarded the Junior Research Fellowship from the Council for Scientific and Industrial Research (CSIR-NET) in December 2009.
- Institute topper in all the three years of B.Sc. program (honours in physics) in Moti Lal Nehru College, University of Delhi (2005-2008).
- Awarded IASc-INSA-NASI summer research fellowship by the Indian Academy of Sciences.
- Selected for a summer internship in Indo-Swiss project (2009) by the University of Fribourg-Switzerland and received a scholarship from the Fribourg Center for Nanomaterials-Switzerland, to conduct research on oxide thin films and ellipsometry.

Reviewer

- Referee for Journal of High Energy Physics, Physical Review D, Physics Letters B, European Physical Journal C, Nuclear Physics B, Physics of Dark Universe, Classical and Quantum Gravity, Advances in High Energy Physics, etc.

Major collaborations

I have a good collaboration both in India and outside. I have worked closely together with the theoretical physics research group of IIT Kanpur (India) on the applications of the gauge/gravity duality and with people from KU Leuven (Belgium), Helsinki University (Finland), Asia Pacific Center for Theoretical Physics (South Korea). I also have ongoing collaborations with people from TIFR (Mumbai-India), NISER (Bhubaneswar-India) and with a postdoc from United states.

Publication Details

- My publications can be consulted via <http://inspirehep.net/author/profile/Subhash.Mahapatra.1>, and <http://scholar.google.co.in/citations?user=vfuYbZoAAAAJ&hl=en>
- I have co-authored 36 publications in peer reviewed journals. As a single author I have published 5 papers. In addition, I have co-authored 1 peer-reviewed Proceedings.
- My papers are published in **JHEP** (14x, IF = 5.88), **Phys.Rev.D** (13x, IF = 5.3), **Phys. Dark Univ.** (1x, IF = 5.1), **Phys.Rev.E** (3x, IF = 2.53), **Euro.Phys.Jour.C** (2x, IF = 4.59), **Phys.Lett.B** (1x, IF = 4.77), **Euro.Phys.Jour.A** (1x, IF = 2.8). My single author papers are published in **JHEP** (3x, IF = 5.88), **Euro.Phys.Jour.C** (2x, IF = 4.77). IF = current impact factor.
- Total citations ~ 1200 , i10-index ~ 28 , h-index ~ 21 .

The authors name are usually ordered alphabetically.

List of Published Papers

1. Authors: Bhaskar Shukla, Owais Riyaz, **Subhash Mahapatra**
Title: Classical and quantum chaos of closed strings on a charged confining holographic background,
Journal: Phys. Rev. D 111 (2025) 6, 066019; Impact Factor: 5.3.
2. Authors: Siddhi Jena, **Subhash Mahapatra**
Title: A note on the holographic time-like entanglement entropy in Lifshitz theory,
Journal: JHEP 01 (2025) 055; Impact Factor: 5.88.
3. Authors: Siddhi Jena, Jyotirmoy Barman, Bruno Toniato, David Dudal, **Subhash Mahapatra**
Title: A dynamical Einstein-Born-Infeld-dilaton model and holographic quarkonium melting in a magnetic field,
Journal: JHEP 12 (2024) 096; Impact Factor: 5.88.
4. Authors: Bhaskar Shukla, Pranaya das, David Dudal, **Subhash Mahapatra**
Title: Interplay between the Lyapunov exponents and phase transitions of charged AdS black holes,
Journal: Phys. Rev. D 110 (2024) 024068; Impact Factor: 5.3.
5. Authors: Ayan Daripa, **Subhash Mahapatra**
Title: Analytic three-dimensional primary hair charged black holes with Coulomb-like electrodynamics and their thermodynamics,
Journal: Phys. Rev. D 109 (2024) 124039; Impact Factor: 5.3.
6. Authors: Supragyan Priyadarshinee, **Subhash Mahapatra**
Title: Analytic three-dimensional primary hair charged black holes and thermodynamics,
Journal: Phys. Rev. D 108 (2023) 044017; Impact Factor: 5.3.
7. Authors: Bhaskar Shukla, David Dudal, **Subhash Mahapatra**
Title: Anisotropic and frame dependent chaos of suspended strings from a dynamical holographic QCD model with magnetic field,
Journal: JHEP 06 (2023) 178; Impact Factor: 5.88.

8. Authors: Parul Jain, Niko Jokela, Matti Jarvinen, **Subhash Mahapatra**
Title: Bounding entanglement wedge cross sections,
Journal: JHEP 03 (2023) 102; Impact Factor: 5.88.
9. Authors: Parul Jain, Siddhi Jena, **Subhash Mahapatra**
Title: Holographic confining/deconfining gauge theories and entanglement measures with a magnetic field,
Journal: Phys. Rev. D 107 (2023) 8, 086016; Impact Factor: 5.3.
10. Authors: **Subhash Mahapatra**, Indrani Banarjee
Title: Rotating hairy black holes and thermodynamics from gravitational decoupling,
Journal: Phys. of the Dark Univ. 39 (2023) 101172; Impact Factor: 5.09.
11. Authors: Siddhi Jena, Bhaskar Shukla, David Dudal, **Subhash Mahapatra**
Title: Entropic force and real-time dynamics of holographic quarkonium in a magnetic field,
Journal: Phys. Rev. D 105 (2022) 086011; Impact Factor: 5.3.
12. Authors: Supragyan Priyadarshinee, **Subhash Mahapatra**, Indrani Banarjee
Title: Analytic topological hairy dyonic black holes and thermodynamics,
Journal: Phys. Rev. D 104 (2021) 084023; Impact Factor: 5.3.
13. Authors: David Dudal, Ali Hajilou, **Subhash Mahapatra**,
Title: A quenched 2-flavour Einstein-Maxwell-dilaton gauge-gravity model,
Journal: Eur. Phys. Jour. A 57 (2021) 4, 142; Impact Factor: 2.8.
14. Authors: Hardik Bohra, David Dudal, Ali Hajilou, **Subhash Mahapatra**,
Title: Chiral transition in the probe approximation from an Einstein-Maxwell-dilaton gravity model,
Journal: Phys. Rev. D 103 (2021) 086021; Impact Factor: 5.3.
15. Authors: Parul Jain, **Subhash Mahapatra**
Title: Mixed state entanglement measures as probe for confinement,
Journal: Phys. Rev. D 102 (2020) 126022; Impact Factor: 5.3.
16. Authors: **Subhash Mahapatra**,
Title: A note on the total action of $4D$ Gauss-Bonnet theory,
Journal: Eur. Phys. Jour. C 80 (2020) 10, 992 ; Impact Factor: 4.59.
17. Authors: **Subhash Mahapatra**, Supragyan Priyadarshinee, Gosala Narshima Reddy, Bhaskar Shukla
Title: Exact topological charged hairy black holes in AdS Space in D -dimensions,
Journal: Phys. Rev. D 102 (2020) 024042; Impact Factor: 5.3.
18. Authors: Hardik Bohra, David Dudal, Ali Hajilou, **Subhash Mahapatra**,
Title: Anisotropic string tensions and inversely magnetic catalyzed deconfinement from a dynamical AdS/QCD model,
Journal: Phys. Lett B 801 (2020) 135184; Impact Factor: 4.77.
19. Authors: **Subhash Mahapatra**,
Title: Interplay between the holographic QCD phase diagram and mutual & n -partite information,
Journal: JHEP 04 (2019) 137; Impact Factor: 5.88.
20. Authors: **Subhash Mahapatra**, Pratim Roy,
Title: On the time dependence of holographic complexity in a dynamical Einstein-dilaton model,
Journal: JHEP 11 (2018) 138; Impact Factor: 5.88.
21. Authors: David Dudal, **Subhash Mahapatra**,
Title: Interplay between the holographic QCD phase diagram and entanglement entropy,
Journal: JHEP 07 (2018) 120; Impact Factor: 5.88.
22. Authors: **Subhash Mahapatra**,
Title: Logarithmic Black Hole Entropy Corrections and Holographic Renyi Entropy,
Journal: Eur. Phys. Jour. C 78 (2018), 23; Impact Factor: 4.59.

23. Authors: David Dudal, **Subhash Mahapatra**,
Title: Thermal entropy of a quark-antiquark pair above and below deconfinement from a dynamical holographic QCD model,
Journal: Phys. Rev. D 96 (2017) no.12, 126010; Impact Factor: 5.3.
24. Authors: David Dudal, **Subhash Mahapatra**,
Title: Confining gauge theories and holographic entanglement entropy with a magnetic field,
Journal: JHEP 04 (2017) 031; Impact Factor: 5.88.
25. Authors: **Subhash Mahapatra**,
Title: Thermodynamics, Phase Transition and Quasinormal modes with Weyl corrections,
Journal: JHEP 04 (2016) 142; Impact Factor: 5.88.
26. Authors: Anshuman Dey, **Subhash Mahapatra**, Tapobrata Sarkar,
Title: Thermodynamics and entanglement entropy with Weyl corrections,
Journal: Phys. Rev. D 94 (2016) 026006; Impact Factor: 5.3.
27. Authors: Anshuman Dey, **Subhash Mahapatra**, Tapobrata Sarkar,
Title: Holographic thermalization with Weyl corrections,
Journal: JHEP 01 (2016) 088; Impact Factor: 5.88.
28. Authors: Reevu Maity, **Subhash Mahapatra**, Tapobrata Sarkar,
Title: Information Geometry and the Renormalization Group,
Journal: Phys.Rev.E 92 (2015) 052101; Impact Factor: 2.53.
29. Authors: **Subhash Mahapatra**,
Title: Generalized Superconductors and Holographic Optics - II,
Journal: JHEP 01 (2015) 148; Impact Factor: 5.88.
30. Authors: Anshuman Dey, **Subhash Mahapatra**, Tapobrata Sarkar,
Title: Very General Holographic Superconductors and Entanglement Thermodynamics,
Journal: JHEP 12 (2014) 135; Impact Factor: 5.88.
31. Authors: Anshuman Dey, **Subhash Mahapatra**, Tapobrata Sarkar,
Title: Generalized holographic superconductors with higher derivative couplings,
Journal: JHEP 06 (2014) 147; Impact Factor: 5.88.
32. Authors: **Subhash Mahapatra**, Prabwal Phukon, Tapobrata Sarkar,
Title: Generalized Superconductors and Holographic Optics,
Journal: JHEP 01 (2014) 135; Impact Factor: 5.88.
33. Authors: Prashant Kumar, **Subhash Mahapatra**, Prabwal Phukon, Tapobrata Sarkar,
Title: Geodesics in information geometry: Classical and quantum phase transitions,
Journal: Phys.Rev.E 86 (2012) 051117; Impact Factor: 2.53.
34. Authors: Anshuman Dey, **Subash Mahapatra**, Pratim Roy, Tapobrata Sarkar,
Title: Information geometry and quantum phase transitions in the Dicke model,
Journal: Phys.Rev.E 86 (2012) 031137; Impact Factor: 2.53.
35. Authors: **Subhash Mahapatra**, Prabwal Phukon, Tapobrata Sarkar,
Title: Black hole entropy corrections in the grand canonical ensemble,
Journal: Phys.Rev.D 84 (2011) 044041; Impact Factor: 5.3.

List of Published Conference Papers

1. Authors: David Dudal and **Subhash Mahapatra**,
Title: Thermal entropy of a quark-antiquark pair from a dynamical holographic EMD model,

Journal: Acta Phys. Polon. Supp. 10 (2017) no.4, 1145-1152.