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PERSONAL INFORMATION

Date of Birth: November 17, 1980.

Marital Status: Married.

Languages: Bengali (Mother tongue), English, Hindi.

EDUCATION

Ph.D. Theoretical Physics, Institute of Physics (IOP), Bhubaneswar, India 2012. (*Official Award Date:* 24.07.2013.)

Dissertation: Aspects of Gauge/Gravity duality.

Advisor: Sudipta Mukherji.

M.Sc Physics, Rajabazar Science College, University of Calcutta, India, 2005.

B.Sc Physics, Dinabandhu Andrews College, University of Calcutta, India, 2002.

RESEARCH EXPERIENCE

Current Positions

Indian Institute of Technology Ropar, Rupnagar, Punjab 140001, India. : Assistant Professor, December'16 – present.

Previous Research Positions

Indian Institute of Technology Kanpur, India : Postdoctoral Fellow, August'16 – November'16.

Van Swinderen Institute for Particle Physics and Gravity University of Groningen, The Netherlands : Postdoctoral Fellow, 2015 – 2016.

Indian Institute for Science Education and Research, Pune, India : Postdoctoral Fellow, 2014 –2015.

Institute of Mathematical Sciences(IMSc), Chennai, India : Postdoctoral Fellow, 2012 – 2014.

Short-Term Visits

Institute of Theoretical Physics (ITP), Beijing, China: December '11.

Institute for the Physics and Mathematics of the Universe (IPMU), Kashiwa, Japan: January '12.

Center for Quantum Space-time (CQeST), Seoul, South Korea: February '12.

Vienna University of Technology, Austria: October '14.

Max-Planck-Institut für Gravitationsphysik (Albert-Einstein-Institut), Potsdam, Germany: November '14.

Centre of Particle Theory, Department of Mathematical Sciences, Durham University, UK: March '19.

RESEARCH AREAS

Broad Area of Research: String Theory and Gauge/Gravity Duality.

Present main interests: Tensionless string theory, Entanglement Entropy, Conformal Field theory, Flat-Holography.

RESEARCH SUPERVISION

Supervision of PhD student :

Shagun Kaushal (Awarded on 16/10/ 2023), Joint supervisor.

Sanjay Pant (ongoing).

Arpit Maurya (ongoing).

Pronoy Chakraborty (ongoing)

Supervision of Post-doctoral fellow :

Dr. Karunava Sil (completed).

Dr. Sabir Ali (completed).

Dr. Hironori Hoshino (completed).

Supervision of Masters student :

Puspa, Entanglement in multi particle scattering, (completed).

Mahantesh Khetri, PARTICLE DECAY AND QUANTUM ENTANGLEMENT, (completed).

Mrityunjay Nath, Tensionless String Theory, (completed).

Sourish Banerjee, Large c Limit in Conformal Field Theory, (completed).

Abhinav Jaguri, Chaos in Quantum Field Theory, (completed).

Kelzyang Tamang, ENTANGLEMENT IN 2-D CFT, (completed).

Utkarsh Sinha, GALILEAN CONFORMAL FIELD THEORY, (completed).

Aman Gupta, Thermofield Double, (completed).

Bishwaranjan Das, Carrollian field theory, (ongoing).

Barun Dhanna, Singular limits of string , (ongoing).

SEMINARS

“ w_∞ 3-algebra and its geometric realisation”

National Strings Meeting-2010 IIT Bombay, Mumbai, India (Feb '10).

“BPS configuration and vacuum moduli space of BLG model”

Institute of Physics, Bhubaneswar, India (Jan '11).

“Drag force from AdS/CFT”

Indian Institute of Science(IISc), Bangalore, India (April, '12);

Center for Quantum Space time (CQUeST), Seoul, South Korea (Feb. '12);

Asia Pacific Center for Theoretical Physics (APCTP), Pohang, South Korea (Feb '12);

Yukawa Institute for Theoretical Physics (YITP), Kyoto, Japan (Jan '12);

Nagoya University, Nagoya, Japan (Jan '12);

The University of Science and Technology of China (USTC), He-Fei, China, (Jan, '12);

Institute of Theoretical Physics (ITP), Beijing, China, (Dec, '11);

National Chiao Tung University (NCTU), Hsinchu, Taiwan (Dec, '11);

National String Meeting-2011, University of Delhi, Delhi, India (Delhi, '11).

Alok Kumar Memorial Meeting, Institute of Physics, Bhubaneswar, India (Sept, '11).

Saha Institute of Nuclear Physics (SINP), Kolkata, India (July, '11).

“Correlators of Giant Gravitons from dual ABJ(M) Theory”

Institute of Mathematical Sciences (IMSc), Chennai (April '12);

Center for Quantum Space time (CQUeST), Seoul, South Korea (Feb, '12);

6th Asian Winter School on String, Particle, Cosmology, Kusatsu, Japan (Jan, '12).

“Brownian motion and AdS/CFT”

Max-Planck-Institut für Gravitationsphysik (Albert-Einstein-Institut), Potsdam, Germany (Nov '14);

Vienna University of Technology, Vienna, Austria (Oct '14);

Instituto de Física Teórica UAM/CSIC, Madrid, Spain (July '14);

Oviedo University, Oviedo, Spain, (July '14);

National String Meeting, IIT Kharagpur, Kharagpur, India (Dec, '13).

“Recent Developments in Holographic Entangle Entropy”

Weekly Gravity Meeting, IISER-Pune, India, (February 2015).

“Schwinger Effect and Negative Differential Conductivity in Holographic Models” (Short Talk)

Advanced String School, ICTS-TIFR, India (June 2015).

“Tensionless Limit of String Theory”

Institute of Physics (IOP), Bhubaneswar, (July 2015).

“Tensionless Limit of String Theory”

Indian Institute of Technology, Kanpur, (January 2016).

“AdS/CFT correspondence”

Savitribai Phule Pune University, Pune, (February 2016).

“AdS/CFT correspondence”

Indian Institute of Technology, Patna, (February 2016).

“Tensionless Limit of String: Worldsheet Approach”

Indian String Meeting - 2016, Indian Institute of Science Education and Research, Pune, December 2016.

“Tensionless Limit of String Theory”

Strings attached (Workshop in String Theory) - 2017, Indian Institute of Technology, Kanpur, March 2017.

“Emergent α like fermionic vacuum structure and entanglement in the hyperbolic de Sitter spacetime”

Centre of Particle Theory, Department of Mathematical Sciences, Durham University, UK, March, 2019.

“Tensionless string theory: A tale of three”

Shivalik HEPCATS Meeting, Department of Physics, IISER Mohali, December, 2019.

“Emergent α like fermionic vacuum structure and entanglement in the hyperbolic de Sitter spacetime”

BITS Goa, Department of Physics, December, 2019.

“String theory, a road to quantum gravity”

Emerging Trends in Physical Sciences (ETPS-2021) - 2021, Department of Physics ICFAI SCIENCE SCHOOL, THE ICFAI UNIVERSITY, TRIPURA, October, 2021.

“Tensionless string theory: A fairy tale on the worldsheet”

Emerging Trends in Physical Sciences, Department of Physics, Chandigarh University, March, 2021.

“Tensionless string theory: A fairy tale on the worldsheet”

IEST Shibpur, April, 2022.

“Rindler physics of tensionless string.”

Shivalik HEPCATS- CUHP, September, 2022.

“Holographic thermal correlator”

Strings attached 2 (Workshop in String Theory), Indian Institute of Technology, Kanpur, September, 2023.

RESEARCH GRANT

ISIRD grant: Project title: Explorations in Entanglement Entropy, Sponsors: IIT Ropar, Funding: 29, 80,000 INR, Duration: Three years, Status: Completed.

Core Research Grant: Project title: Singular limits of string theory, Sponsors: DST-SERB, Funding: 21, 52,612 INR, Duration: Three years, Status: Sanction order generated.

PUBLICATIONS OF SHANKHADEEP CHAKRABORTTY.

Summary

Total 28 publications.

Physical Review Letter (impact factor 9.161): 1

Journal of High Energy Physics (impact factor 6.379): 13.

Physics Letters B (impact factor 4.95): 6 (1 singly authored).

Physical Review D (impact factor 5.407) : 5.

Nuclear Physics B (impact factor 3.045) : 1

European Physical Journal C (impact factor 4.994) : 2.

h-index: 6.

Data based on HEP-Inspire.

Refereed Articles in International Journals

1. *Holographic Thermal Correlators for Hyperbolic CFTs.*
Atanu Bhatta, Shankhadeep Chakrabortty, Taniya Mandal, Arpit Maurya
Communicated to [JHEP11\(2023\)156](#), [e-Print: [arXiv:2308.14704 \[hep-th\]](#)]. ([Weblink](#))
2. *A holographic study of the characteristics of chaos and correlation in the presence of backreaction.*
Shankhadeep Chakrabortty, Hironori Hoshino, Sanjay Pant, Karunava Sil
Communicated to [Phys.Lett.B 838 \(2023\) 137749](#), [e-Print: [arXiv:2206.12555 \[hep-th\]](#)]. ([Weblink](#))
3. *A Rindler road to Carrollian worldsheets.*
Arjun Bagchi, Aritra Banerjee, Shankhadeep Chakrabortty, Ritankar Chatterjee
Communicated to [JHEP 04 \(2022\) 082](#), [e-Print: [arXiv:2111.01172 \[hep-th\]](#)]. ([Weblink](#))
4. *Non-Lorentzian chaos and cosmological holography.*
Arjun Bagchi, Shankhadeep Chakrabortty, Daniel Grumiller, Bharathkumar Radhakrishnan, Max Riegler
Communicated to [Phys.Rev.D 104 \(2021\) 10, L101901](#), [e-Print: [arXiv:2106.07649 \[hep-th\]](#)]. ([Weblink](#))
5. *Fermionic Bell violation in the presence of background electromagnetic fields in the cosmological de Sitter spacetime.*
Md Sabir Ali, Sourav Bhattacharya, Shankhadeep Chakrabortty, Shagun Kaushal.
Communicated to [Phys.Rev.D 104 \(2021\) 12, 125012](#) , [e-Print: [arXiv:2102.11745 \[hep-th\]](#)]. ([Weblink](#))
6. *Rindler Physics on the String Worldsheets.*
Arjun Bagchi, Aritra Banerjee, Shankhadeep Chakrabortty.
Communicated to [Phys.Rev.Lett. 126 \(2021\) 3, 031601](#), [e-Print: [arXiv:2009.01408 \[hep-th\]](#)]. ([Weblink](#))
7. *Background magnetic field and quantum correlations in the Schwinger effect.*
Sourav Bhattacharya, Shankhadeep Chakrabortty, Hironori Hoshino, Shagun Kaushal.
Communicated to [Phys.Lett.B 811 \(2020\) 135875](#), [e-Print: [arXiv:2005.12866 \[hep-th\]](#)]. ([Weblink](#))
8. *Effect of back reaction on entanglement and subregion volume complexity in strongly coupled plasma.*
Shankhadeep Chakrabortty, Sanjay Pant, Karunava Sil.
Communicated to [JHEP 06 \(2020\) 061](#), [e-Print: [arXiv:2004.06991 \[hep-th\]](#)]. ([Weblink](#))
9. *A tale of three ? tensionless strings and vacuum structure*
Arjun Bagchi, Aritra Banerjee, Shankhadeep Chakrabortty, Sudipta Dutta, Pulastya Parekh.
Communicated to [JHEP 04 \(2020\) 061](#), [e-Print: [arXiv:2001.00354 \[hep-th\]](#)]. ([Weblink](#))
10. *Dirac fermion, cosmological event horizons and quantum entanglement*
Sourav Bhattacharya, Shankhadeep Chakrabortty, Shivang Goyal.
Communicated to [Phys.Rev.D 101 \(2020\) 8, 085016](#) , [e-Print: [arXiv:1912.12272 \[hep-th\]](#)]. ([Weblink](#))

11. *High temperature behavior of non-local observables in boosted strongly coupled plasma: A holographic study*
Atanu Bhatta, Shankhadeep Chakrabortty, Suat Dengiz, Ercan Kilicarslan.
Communicated to [Eur.Phys.J.C 80 \(2020\) 7, 663](#), [e-Print: [arXiv:1909.03088 \[hep-th\]](#)]. ([Weblink](#))
12. *Exotic Origins of Tensionless Superstrings*
Arjun Bagchi, Aritra Banerjee, Shankhadeep Chakrabortty, Pulastya Parekh.
Communicated to [Phys.Lett.B 801 \(2020\) 135139](#), [e-Print: [arXiv:1811.10877 \[hep-th\]](#)]. ([Weblink](#))
13. *Emergent $\mathbb{Z}_2$ -like fermionic vacuum structure and entanglement in the hyperbolic de Sitter spacetime*
Sourav Bhattacharya, Shankhadeep Chakrabortty, Shivang Goyal.
Communicated to [Eur.Phys.J.C 79 \(2019\) 9, 799](#), [e-Print: [arXiv:1812.07317 \[hep-th\]](#)]. ([Weblink](#))
14. *Inhomogeneous Tensionless Superstrings*
Arjun Bagchi, Aritra Banerjee, Shankhadeep Chakrabortty, Pulastya Parekh.
Communicated to [JHEP 02 \(2018\) 065](#), [e-Print: [arXiv:1710.03482 \[hep-th\]](#)]. ([Weblink](#))
15. *Holographic P-wave Superconductors in 1+1 Dimensions*
Gokhan Alkac, Shankhadeep Chakrabortty, Pankaj Chaturvedi.
Communicated to [Phys.Rev.D 96 \(2017\) 8, 086001](#), [e-Print: [arXiv:1610.08757 \[hep-th\]](#)]. ([Weblink](#))
16. *Tensionless Superstrings: View from the Worldsheet*
Arjun Bagchi, Shankhadeep Chakrabortty, Pulastya Parekh.
Communicated to [JHEP 10 \(2016\) 113](#), [e-Print: [arXiv:1606.09628 \[hep-th\]](#)]. ([Weblink](#))
17. *Holographic Entanglement Entropy in NMG*
Luca Basanisi, Shankhadeep Chakrabortty.
Communicated to [JHEP 09 \(2016\) 144](#), [e-Print: [arXiv:1606.01920 \[hep-th\]](#)]. ([Weblink](#))
18. *Back reaction effects on the dynamics of heavy probes in heavy quark cloud*
Shankhadeep Chakrabortty, Tanay Dey.
Published in [JHEP 1605 \(2016\) 094](#), [e-Print: [arXiv:1602.04761 \[hep-th\]](#)]. ([Weblink](#))
19. *Tensionless Strings from World sheet Symmetries*
Arjun Bagchi, Shankhadeep Chakrabortty, Pulastya Parekh.
Published in [JHEP 1601 \(2016\) 158](#) [e-Print: [arXiv:1507.04361 \[hep-th\]](#)]. ([Weblink](#))
20. *Schwinger Effect and Negative Differential Conductivity in Holographic Models*
Shankhadeep Chakrabortty, B.Sathiapalan
Published in [Nucl.Phys. B890 \(2014\) 241-262](#) [e-Print: [arXiv:1409.1383 \[hep-th\]](#)]. ([Weblink](#))
21. *Brownian motion in strongly coupled, anisotropic Yang-Mills plasma: A holographic approach*
Shankhadeep Chakrabortty, Somdeb Chakraborty, Najmul Haque
Published in [Phys.Rev. D89 \(2014\) 066013](#) [e-Print: [arXiv:1311.5023\[hep-th\]](#)]. ([Weblink](#))
22. *Some aspects of QGP phase in a hQCD model*
Rong-Gen Cai, Shankhadeep Chakrabortty, Song He, Li Li
Published in [JHEP 1302 \(2013\) 068](#) [e-Print: [arXiv:1209.4512\[hep-th\]](#)]. ([Weblink](#))
23. *Correlators of Giant Gravitons from dual ABJ(M) Theory*
Shankhadeep Chakrabortty, Tanay K. Dey
Published in [JHEP 1203 \(2012\) 062](#) [e-Print: [arXiv:1112.6299\[hep-th\]](#)]. ([Weblink](#))
24. *Dissipative force on an external quark in heavy quark cloud*
Shankhadeep Chakrabortty
Published in [Phys.Lett. B705 \(2011\) 244-250](#) [e-Print: [arXiv:1108.0165\[hep-th\]](#)]. ([Weblink](#))
25. *Some BPS configurations of the BLG Theory*
Sudipto Paul Chowdhury, Shankhadeep Chakrabortty, Koushik Ray
Published in [Phys.Lett. B703 \(2011\) 172-179](#) [e-Print: [arXiv:1105.2898\[hep-th\]](#)]. ([Weblink](#))
26. *Proof of universality of electrical conductivity at finite chemical potential*
Sayan K. Chakrabarti, Shankhadeep Chakrabortty, Sachin Jain
Published in [JHEP 1102 \(2011\) 073](#) [e-Print: [arXiv:1011.3499\[hep-th\]](#)]. ([Weblink](#))
27. *Moduli and BPS configurations of the BLG theory*
Shankhadeep Chakrabortty, Sudipto Paul Chowdhury, Thomas Kppe, Koushik Ray
Published in [Phys.Lett. B695 \(2011\) 285-289](#) [e-Print: [arXiv:1005.3707\[hep-th\]](#)]. ([Weblink](#))
28. *w_∞ 3-algebra*
Shankhadeep Chakrabortty, Alok Kumar, Sachin Jain
Published in [JHEP 0809 \(2008\) 091](#) [e-Print: [arXiv:0807.0284\[hep-th\]](#)]. ([Weblink](#))

(The titles are web-linked.)

SCHOOL, CONFERENCES AND WORKSHOPS ATTENDED

- September 2006: *Advanced String School*, Institute of Physics, Bhubaneswar, India.
- October 2006: *SERC preparatory school*, Centre for High Energy Physics, Indian Institute of Science, Bangalore, India.
- December 2006: *Indian Strings Meeting (ISM06)*, Toshali, India.
- January 2007: *SERC main school*, University of Hyderabad, Hyderabad, India.
- September 2007: *Advanced String School*, Institute of Physics, Bhubaneswar, India.
- December 2008: *Indian Strings Meeting (ISM08)*, Pondicherry, India.
- March 2009: *Spring school in Superstring Theory and Related topics*, ICTP, Trieste, Italy.
- January 2010: *The 4th Asian Winter School on Strings, Particles and Cosmology*, Mahabaleswar, India.
- January 2010: *Alok Kumar Memorial Meeting*, Institute Of Physics, Bhubaneswar, India [\[Speaker\]](#).
- February 2010: *National Strings Meeting (NSM10)*, IIT-Bombay, Mumbai, India [\[Speaker\]](#).
- October 2010: *Advanced String School*, Institute of Physics, Puri, India.
- January 2011: *Indian Strings Meeting (ISM11)*, Puri, India.
- September 2011: *Alok Kumar Memorial Meeting*, Institute of Physics, Bhubaneswar, India [\[Speaker\]](#).
- December 2011: *National String Meeting(NSM11)*, University of Delhi, Delhi, India [\[Speaker\]](#).
- December 2011: *4th Taiwan String Theory Workshop*, National Chiao Tung University (NCTU), Hsinchu, Taiwan.
- January 2012: *6th Asian Winter School on String, Particle, Cosmology*, Kusatsu, Gunma, Japan [\[Speaker, Short talk\]](#).
- October 2012: *Advanced String School*, Institute of Physics, Bhubaneswar, India.
- December 2012: *Indian String Meeting (ISM 2012)*, Institute of Physics, Bhubaneswar, India.
- March 2013: *Spring school in Superstring Theory and Related topics*, ICTP, Trieste, Italy.
- December 2013: *Asymptotia: Workshop on Asymptotic Symmetries in Classical and Quantum Gravity*, Chennai Mathematical Institute, India.
- December 2013: *National String Meeting(NSM13)*, IIT Kharagpur, Kharagpur, India [\[Speaker\]](#).
- April 2014: *Mock Modular Forms in Physics*, Institute of Mathematical Sciences, Chennai, India.
- July 2014: *Summer School on String Theory and Holography*, Instituto Superior Tecnico, Lisbon, Portugal.
- September 2014: *Advanced String School*, Institute of Physics, Bhubaneswar, India.
- December 2014: *Indian Strings Meeting (ISM14)*, Puri, India.
- December 2014: *Stringy Days*, IISER-Pune, India.
- June 2015: *Advanced String School, ICTS-TIFR*, Indian Institute of Science, Bangalore, India [\[Speaker, Short talk\]](#).
- June 2015: *STRINGS-2015*, ICTS-TIFR, Bangalore, India.
- March 2016: *Sixth Quantum Universe Symposium*, University of Groningen, Groningen, Netherlands.
- April 2016: *Holography@D-ITP Triangle Meeting*, Utrecht University, Utrecht, Netherlands.
- May 2016: *ERC and Solvay Workshop - Holography for Black Holes and Cosmology*, International Solvay Institute, Universit libre de Bruxelles, Brussels, Belgium.
- December 2016: *Indian Strings Meeting (ISM16)*, IISER-Pune, India [\[Speaker\]](#).
- March 2017:*Strings attached (Workshop in String Theory)* , Indian Institute of Technology, Kanpur, India [\[Speaker\]](#).
- August 2017:*Second Physics Day-2017* , Indian Institute of Technology, Ropar, India.
- June 2018:*String* , OIST, Okinawa, JAPAN.
- June 2019:*Indian String Meeting* , IISER TVM, Kerala, India.
- December 2019:*National String meeting* , IISER Bhopal, India.
- December 2019:*HEPCATS* , IISER Mohali, India.
- Summer 2020: *HEPCATS* , IISER Mohali, India.

Winter 2020: *HEPCATS - Online*, IISER Mohali, India.

December 2021: *ISM - Online*, IIT Roorkee, India.

September 2022: *HEPCATS*, CUHP, Himachal Pradesh, India.

May 2023: *HEPCATS*, NIT Jalandhar, Punjab, India.

September 2023: *Strings attached 2*, IIT Kanpur, India.