Curriculum Vitae – Dr. Sayantan Choudhury, MNASc

Name, Present Affiliation and contact details

Dr. Sayantan Choudhury
Member of The National Academy of Sciences, India (MNASc)
Associate member of The North American Nanohertz Observatory for Gravitational Waves (NANOGrav) collaboration

Official address :
Institute of Theoretical Physics, University of Warsaw, Ludwika Pasteura 5, 02-093 Warszawa, Poland.
Pacif Institute of Cosmology and Selfology (PICS)
At/Po :- Sagara, Dist. :- Sambalpur, PIN :- 768224, State :- Odisha, INDIA

Permanent address :
173/5 R. N. Guha Road, Masjid Gate-Gorabazar, Dum Dum Cantonement
North 24 PGS, West Bengal, Kolkata-700028, India.

E-mail :
sayanphysicsisi@gmail.com,
sayantan.choudhury@nanograv.org

Telephone :
+49 17637397576 (Personal Mobile: German Number - WhatsApp),
+91 7849044574 (Personal Mobile: Indian Number - WhatsApp)
+91 78490 44574 (Personal Mobile: Indian Number - For Telephone),
+91 86973 65275 (Personal Mobile: Indian Number - For Telephone).

Important links :
Institutional homepage link
Inspire-hep link
Google Scholar link
Linkedin link
ORCID link
Web of Science link
Scopus link

Date of Birth June 25, 1987

Place and Country of birth Kolkata, West Bengal, India

Nationality Indian

Catergory General

Physical disability No

Marital status Single

Sex Male

Educational qualifications

- **Ph.D., Theoretical Physics (Cosmology)**, March 2016,
  Physics and Applied Mathematics Unit (PAMU),
  Indian Statistical Institute (ISI), Kolkata, India.
  (Degree obtained from University of Calcutta)
  Thesis title : Field Theoretic Approaches to Early Universe
  Advisor : Dr. Supratik Pal

- **M.Sc in Physics**, July 2009,
  University of Calcutta, Kolkata, India.

- **B.Sc in Physics**, July 2007,
  Scottish Church College (University of Calcutta, Kolkata, India.).

Professional organizations

- **Senior Scientist**, December 2024 to present,
  Institute of Theoretical Physics, University of Warsaw, Ludwika Pasteura 5, 02-093 Warszawa, Poland.

- **Senior Scientist**, November 2024 to present,
  Pacif Institute of Cosmology and Selfology (PICS)
  At/Po :- Sagara, Dist. :- Sambalpur, PIN :- 768224, State :- Odisha, INDIA.

- **Assistant Professor (Senior Grade)**, August 2022 to October 2024,
  The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP)
  Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR,
  Gurugram-Badli Road, Budhera, Gurugram - 122505, India.

- **Visiting Post-Doctoral Fellow**, March 2022 to August 2022,
  International Centre for Theoretical Sciences (ICTS),
  Tata Institute of Fundamental Research (TIFR), Bengaluru
  Survey No. 151, Shivakote, Hesaraghatta, Uttarahalli Hobli, Bengaluru,560089, India.

- **Visiting Scientist**, Octoberber 2020 to February 2022,
  Homi Bhabha National Institute (HBNI),
  Training School Complex, Anushakti Nagar, Mumbai, Maharashtra 400094, India.

- **Visiting Scientist**, November 2021 to February 2022,
  Institute of Physics, Bhubaneswar,
  P.O. : Sainik School, Sachivalaya Marg, Gajapati Nagar, Bhubaneswar, Odisha 751005, India.

- **Jagadish Chandra Bose Visiting Scientist**, October 2020 to October 2021,
  School of Physical Sciences (SPS),
  National Institute for Science Education and Research (NISER), Bhubaneswar
  P.O. Jatni, Khurda 752050, Odisha, India.

- **Junior Scientist/Post-Doctoral Fellow**, March 2018 to October 2020,
  Quantum Gravity and Unified Theories and Theoretical Cosmology Group,
  Max Planck Institute for Gravitational Physics (Albert Einstein Institute),
  Potsdam-Golm, Germany,

- **Post-Doctoral Fellow**, October 2017 to March 2018,
  Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune,
  Post Bag no. : 4, Pune University Campus, Ganeshkhind, Pune - 411007, India.

- **Post-Doctoral Fellow**, February 2015 to October 2017,
  Department of Theoretical Physics (DTP),
  Tata Institute of Fundamental Research (TIFR), Mumbai,
  Dr Homi Bhabha Road, Navy Nagar, Colaba, Mumbai, Maharashtra 400005, India.

Research Interests

- Theoretical Cosmology
  a) Inflation and its alternatives, b) Primordial Black Holes,
  c) Primordial Gravitational Waves, d) Primordial Magnetic Field,
  e) Dark Matter, f) Large Scale Structure formation, g) Cosmological Perturbation Theory.
- QFT and EFT of curved space.
- Open Quantum System, Quantum Dissipative System and its applications in Cosmology.
- Quantum Information Theory aspects of Gravity and Cosmology.
- Out-of-equilibrium aspects of QFT and its applications in Cosmology.
- Quantum and Classical aspects of Gravity.
- Quantum Neural Network and Machine Learning.

Academic achievements/Awards

- Name appeared in **Stanford university's top 2 % scientist list in the year 2024**.
- Essay received an **honorable mention for the Gravity Research Foundation 2024 Awards** for Essays on Gravitation.
- Selected as an **associate member of The North American Nanohertz Observatory for Gravitational Waves (NANOGrav) collaboration** in the year **2024**.
- Selected as a **member of The National Academy of Sciences (NASI), Payagraj, India** in the year **2023** in the **Physical Sciences** category.
- Cited three papers (written from SGTU) by **NANOGrav 15 year Data releasing paper**.
- Promoted in the post of **Associate Editor of Frontiers in Astronomy and Space Sciences, Switzerland** in the **Cosmology** section.
- Elected as a **review board member** of the journal **Entropy, MDPI Open access Journal, Basel, Switzerland**.
- **Awarded the Research Excellence Award 2021 by Institute of Scholars International (INSC) Forum**. The award was delivered virtually due to COVID security reasons.
- **Awarded the Young Scientist Award 2021 by VDGOOD International Scientist Awards on Engineering, Science and Medicine ISAM 2021**. Award ceremony happened on 16 & 17- Jul-2021, Mysore, India.
- **Council of Scientific and Industrial Research National Eligibility Test (CSIR NET)** qualified in the year **2009 (June) (Rank-120)**.
- **Joint Entrance Screening Test (JEST)** qualified in the year **2010 (March) (Percentile :98.78)**.
- **National Graduate Physics Examination (NGPE)** qualified in the year **2007 (Awarded by top merit certificate in India)**.
- **Cited in the Nobel Prize Winning paper** by B. P. Abbott et al. [LIGO Scientific and Virgo Collaborations],"Observation of Gravitational Waves from a Binary Black Hole Merger", **Phys. Rev. Lett. 116 (2016) 6, 061102 [arXiv :1602.03837 [gr-qc]]**.
- Recipient of **Dhirendra Mohan Saha Roy Gold Medal in Physics** in 2007 from Scottish Church College, University of Calcutta, Kolkata, India for scoring the **highest marks in B.Sc. Physics (Hons.)**.
- Recipient of **Pravat Kumar Ghosh Medal in Physics** in 2007 from Scottish Church College, University of Calcutta, Kolkata, India for scoring the **highest marks in B.Sc. Physics (Hons.)**.
- Recipient of **Charu Chandra Chaudhury Medal in Physics** in 2007 from Scottish Church College, University of Calcutta, Kolkata, India for scoring the **highest marks in B.Sc. Physics (Hons.)**.
- Recipient of **Mrs. P. R. Das Memorial Medal in Physics** in 2007 from Scottish Church College, University of Calcutta, Kolkata, India for scoring the **highest marks in B.Sc. Physics (Hons.)**.

Membership/ Associateship/ fellowship in a professional board

- Elected as an **associate member of The North American Nanohertz Observatory for Gravitational Waves (NANOGrav) collaboration** in the year **2024**.
- Elected **member of The National Academy of Sciences (NASI), Payagraj, India** in the year **2023** in the **Physical Sciences** category.
- Elected **memeber of Institute of Scholars International (INSC), Bengaluru, Karnataka, India** from the year **2021**. Professional Member ID : INSC20211219.

Teaching experience

- Course Instructor of Special Topics in Theoretical Physics (Course code : 17080235) 1st semester, Ph.D. CCSP, SGT University. Course Taught in the year 2024.
- Course Instructor of Special Topics in Theoretical Physics (Course code : 17080235) 3rd semester, M.Sc Physics, Department of Physics, SGT University. Course Taught in the year 2024.
- Course Instructor of Statistical Mechanics (Course code : 17080235) 2nd semester, M.Sc Physics, Department of Physics, SGT University. Course Taught in the year 2024.
- Course Instructor of Statistical Mechanics (Course code : 17080105) 1st semester, M.Sc Physics, Department of Physics, SGT University. Course Taught in the year 2022.

Academic/ Administrative responsibilities

- Served the role of Acting Director of The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram from 10/05/2024 to 30/05/2024.
- Coordinator of the Ph.D. program and academic head at The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR, India.

Supervision of M.Sc. Thesis students

- 2020-2021 : Masters thesis supervisor of Kiran Adhikari from Institute for Theoretical Particle Physics and Cosmology (TTK), RWTH Aachen University, Aachen, Germany. Presently working as a Ph.D. student at Technical University (TU), Munich, Germany.
- 2019-2021 : Masters thesis supervisor of Satyaki Chowdhury from National Institute of Science Education and Research (NISER), Bhubaneswar, India. Presently working as a Ph.D. student at Jagiellonian University (JU), Krakow, Poland.
- 2019-2020 : Masters thesis supervisor of Sounav Sengupta from Savitribai Phule Pune University, Pune, Maharashtra, India. Presently working as a Ph.D. student at Ben Gurion University of the Negev, Be'er Sheva, Israel.
- 2015-2016 : Masters thesis supervisor of Rajeev Singh from Savitribai Phule Pune University, Pune, Maharashtra, India. Presently working as a Ph.D. student at the Institute of Nuclear Physics Polish Academy of Sciences, Krakow, Poland.

Supervision of M.Sc./Ph.D./Post Doc Project students

- 2024-present : Long-term project supervisor of Tanmaay Jena from IISER, Pune, India. (Ongoing)
- 2024-present : Long-term project supervisor of Swapnil Kumar Singh from Visvesvaraya Technological University, Bengaluru, India. (Ongoing)
- 2024-present : Long-term project supervisor of Pranjal Tiwari from Indian Institute for Science Education and Research Mohali, India. (Ongoing)
- 2024-present : Long-term project supervisor of Siddhant Ganguly Pranjal from Indian Institute for Science Education and Research Mohali, India. (Ongoing)
- 2024-present : Long-term project supervisor of Bhaskar Barman from Indian Institute for Science Education and Research Kolkata, India. (Ongoing)
- 2023-2023 : Long-term project supervisor of Kinshuk Jarial from Sri Balaji Hostel, Sri Venkateswara College, New Delhi, India.
- 2023-2024 : Long-term project supervisor of Kritatha Dey from Indian Institute of Technology-Indian School of Mines (IIT-ISM), Dhanbad, India.
- 2023-2023 : Short-term project supervisor of Saptarshi Ghosh from Ramakrishna Mission Residential College, Narendrapur, India.
- 2023-present : Long-term project supervisor of Gourab Bhattacharya from National Institute of Science Education and Research, Bhubaneswar, India. (Ongoing)
- 2023-2023 : Short-term project supervisor of Navneet Suryaprakash Mishra from St. Xavier's College, Mumbai, India.
- 2023-2024 : Long-term project supervisor of Pankaj Padiyar from Indian Institute of Science Education and Research, Berhampur, India.
- 2023-present : Long-term project supervisor of Ahaskar Karde from Indian Institute of Science Education and Research, Bhopal, India. (Ongoing)
- 2023-present : Long-term project supervisor of Gaurav Malhotra from Sardar Vallabhbhai National Institute of Technology, Surat, India. (Ongoing)
- 2022-2023 : Long-term project supervisor of Manas Dogra from Department of Physics, Indian Institute of Technology, Hyderabad, India.
- 2022-2023 : Long-term project supervisor of Vinod Viswambharan Pisharody from Department of Physics, Harish Chandra Research Institute, Allahabad, Uttar Pradesh, India.
- 2022-2023 : Long-term project supervisor of Ayushi Tripathi from Department of Physics, Harish Chandra Research Institute, Allahabad, Uttar Pradesh, India.
- 2022-2023 : Long-term project supervisor of Nakshatra Gangopadhay from Department of Physics, Harish Chandra Research Institute, Allahabad, Uttar Pradesh, India.
- 2022-2023 : Long-term project supervisor of Gourang Gehlot from Department of Physics, Harish Chandra Research Institute, Allahabad, Uttar Pradesh, India.
- 2021-2022 : Short-term project supervisor of Subham Patra from Department of Physics, Presidency University, Kolkata,West Bengal, India.
- 2021-2022 : Long-term project supervisor of Silpadas N. from Department of Physics, Pondicherry University, Pondicherry, India.

- 2021-2022 : Long-term project supervisor of Suman Dey from Department of Physics, Visva-Bharati University, West Bengal, India. Just got a Ph.D. offer from University of Hamburg, Germany.
- 2021-2023 : Long-term project supervisor of Rakshit Mandish Gharat from Department of Physics, National Institute of Technology, Karnataka, India.
- 2021-2021 : Short-term project supervisor of Soumya Sarkar from Department of Physics, National Institute of Technology, Karnataka, India.
- 2021-2021 : Short-term project supervisor of Saadat Salman Shariff from Department of Physics, University of Madras, Chennai, India.
- 2021-2021 : Short-term project supervisor of Rohan Srivastava from Indian Institute of Technology, Jodhpur, India.
- 2021-2022 : Long-term project supervisor of Abhishek Roy from Department of Physics, Indian Institute of Technology, Jodhpur, India.
- 2021-2022 : Long-term project supervisor of Nilesh Pandey from Department of Physics, Delhi Technological University, Delhi, India.
- 2021-2022 : Long-term project supervisor of Partha Sarker from Department of Physics, University of Dhaka, Bangladesh.
- 2021-present : Long-term project supervisor of Saptarshi Mandal from Department of Physics, Indian Institute of Technology, Kharagpur, India. Presently joined the Ph.D. program at ICTS-TIFr, Bengaluru. (Ongoing)
- 2020-2021 : Short-term Post Doctoral level supervisor of Dr. Sujoy Mahato from Institute for Mathematical Science (IMSC), Chennai, India.
- 2020-2021 : Short-term project supervisor of Anurag Mishra from National Institute of Technology (NIT), Rourkela, Odisha, India.
- 2020-2021 : Long-term project supervisor of Ankan Datta from Department of Mechanical Engineering, Jadavpur University, Kolkata, India. Now pursuing his Ph.D. at Pennsylvania State University, State College, USA.
- 2020-2021 : Long-term project supervisor of K. Shirish Rao from Visvesvaraya National Institute of Technology, Nagpur, Maharashtra, India.
- 2020-2021 : Long-term project supervisor of Parth Bhargava from Institute for Theoretical Particle Physics and Cosmology (TTK), RWTH Aachen University, Aachen, Germany.
- 2020-2021 : Long-term project supervisor of Sachin Panneer Selvam from Birla Institute of Technology and Science (BITS), Hydrabad, India.
- 2020-2021 : Long-term project supervisor of Gabriel D. Pasquino from University of Waterloo, Waterloo, Ontario, Canada.
- 2020-2021 : Long-term Ph.D. level project supervisor of Johannes Knaute from Max Planck Institute for Gravitational Physics, Albert Einstein Institute, Potsdam, Germany. Now working as a Post-doctoral fellow at Hebrew University of Jerusalem, Israel.
- 2019-2021 : Long-term project supervisor of Abinash Swain from Department of Physics, Indian Institute of Technology, Gandhi Nagar, Gujrat, India. Now pursuing his Ph.D. at Ariel University, Israel.
- 2019-2021 : Long-term project supervisor of Nitin Gupta from Department of Physics, Indian Institute of Science Education and Research, Mohali, India. Now pursuing his Ph.D. at University of Cape Town (main), South Africa.
- 2016-2017 : Summer project supervisor of Pratik Chattopadhyay from Indian Institute of Science Education and Research (IISER), Mohali, India. Presently a faculty member (Assistant Professor) at Amity University, Patna.
- 2019-2020 : Long-term project supervisor of Rathindra Nath Das from Indian Institute of Technology (IIT), Mumbai, India.
- 2019-2020 : Long-term project supervisor of Archana Majhi from Indian Institute of Technology (IIT), Mumbai, India.
- 2017-2018 : Long-term project supervisor of Prashali Chauhan from Indian Institute of Science Education and Research (IISER), Pune, Maharshtra, India. Now pursuing her Ph.D. at Syracuse University, USA.
- 2017-2019 : Long-term project supervisor of Arkaprava Mukherjee from Indian Institute of Science Education and Research (IISER), Kolkata, West Bengal, India. Now pursuing his Ph.D. at The Ohio State University, USA.

Peer Reviewer

1. Journal of High Energy Physics (JHEP), Springer Publication, Netherlands and SISSA, Italy.
2. Journal of Cosmology and Astroparticle Physics (JCAP), IOP Publication and SISSA, Italy.
3. European Physical Journal C : Particle and Fields, Springer Publication, Netherlands.
4. SciPost Physics, SciPost Foundation, Amsterdam, The Netherlands.
5. Physics Letters A (PLA), Elsevier and ScienceDirect Publication, Netherlands.
6. Physics Letters B (PLB), Elsevier and ScienceDirect Publication, Netherlands.
7. Nuclear Physics B (NPB), Elsevier and ScienceDirect Publication, Netherlands.
8. International Journal of Modern Physics A (IJMPA), World Scientific Publication, Singapore.
9. General Relativity and Gravitation (GRG), Springer Publication, USA.
10. Journal of Astrophysics and Astronomy (JOAA), Springer Publication, Netherlands.
11. Canadian Journal of Physics (CJP), Canadian Science Publishing, Canada.
12. Pramana-Journal of Physics, Indian Academy of Sciences, Springer Publication, Netherlands.
13. Quantum Information Processing, Springer publication, Switzerland.
14. Philosophical Transactions of the Royal Society A : Mathematical, Physical and Engineering Sciences, Royal Society Publishing, United Kingdom.
15. Chinese Journal of Physics, Elsevier and ScienceDirect Publication, Netherlands.
16. Advances in High Energy Physics, Hindwai publication, United Kingdom.
17. Frontiers in Physics, Switzerland.
18. Frontiers in Astronomy and Space Sciences, Switzerland.
19. Mathematical Reviews, American Mathematical Society, USA (Appointed reviewer for High Energy Theory, Mathematical Physics and Field Theory).
20. Heliyon, Elsevier and ScienceDirect Publication, Netherlands.
21. Indian Journal of Physics (IJP), Springer Publication, IACS, Calcutta.
22. Universe, MDPI Open access Journal, Basel, Switzerland.
23. Symmetry, MDPI Open access Journal, Basel, Switzerland.
24. Entropy, MDPI Open access Journal, Basel, Switzerland.
25. Condensed Matter, MDPI Open access Journal, Basel, Switzerland.
26. Galaxy, MDPI Open access Journal, Basel, Switzerland.
27. Applied Sciences, MDPI Open access Journal, Basel, Switzerland.
28. Quantum Reports, MDPI Open access Journal, Basel, Switzerland.
29. Energies, MDPI Open access Journal, Basel, Switzerland.
30. Mathematics, MDPI Open access Journal, Basel, Switzerland.
31. Fractal and Fractional, MDPI Open access Journal, Basel, Switzerland.
32. Electronics, MDPI Open access Journal, Basel, Switzerland.
33. Chemistry, MDPI Open access Journal, Basel, Switzerland.
34. Axioms, MDPI Open access Journal, Basel, Switzerland.
35. Recent progress in materials, LIDSEN Publishing, USA.
36. Chaos, Solitons and Fractals, Elsevier and ScienceDirect Publication, Netherlands.
37. Qeios, London, United Kingdom.
38. Contemporary Mathematics, Universal Wiser Publisher, Singapore.
39. Physica Scripta, IOP Publications.
40. Astroparticle Physics, Elsevier and ScienceDirect Publication, Netherlands.
41. Physica A : Statistical Mechanics and its Applications, Elsevier and ScienceDirect Publication, Netherlands.
42. Physica B : Condensed Matter, Elsevier and ScienceDirect Publication, Netherlands.

43. Physics of the Dark Universe, Elsevier and ScienceDirect Publication, Netherlands.
44. International Journal of Modern Physics B (IJMPB), World Scientific Publication, Singapore.
45. Europhysics Letters (EPL), IOP Publication, Italian Physical Society, EDP Sciences.
46. Open Physics, De Gruyter Open Ltd., Warsaw POLAND.
47. Journal of Physics A : Mathematical and Theoretical, IOP Publishing Ltd., United Kingdom.
48. Journal of Modern Physics (JMP), Scientific Research Publishing, Los Angeles CA, USA.
49. Annals of Physics, Elsevier and ScienceDirect Publication, Netherlands.
50. Quantum Information & Computation, Rinton Press, Paramus, NJ.

Editorial job

1. Invited leading Editor for a special issue of the journal Universe, named Quantum Aspects of Universe. Co-edited with Professor Sudhakar Panda and Professor Subhashish Banerjee.
2. Invited leading Editor for a special issue of the journal Symmetry, named Symmetry with Quantum Statistical Field Theory. Co-edited with Professor Savan Kharel.
3. Promoted in the post of Associate Editor of Frontiers in Astronomy and Space Sciences, Switzerland in the Cosmology section.
4. Appointed as the Editorial board member of Academia Quantum, San Francisco, California, USA.

Review board member

1. Elected review board member of Entropy, MDPI Open Access Journal, Basel, Switzerland.
2. Review Editor for Frontiers in Physics, Switzerland on Cosmology and High Energy Astroparticle Physics.

Reviewer of scientific proposal/professional committee

1. Reviewer and evaluator of Junior Research Projects of the Research Foundation Flanders (FWO). Invited by European Science Foundation (ESF).
2. Reviewer and evaluator of Senior Research Projects of the Research Foundation Flanders (FWO). Invited by European Science Foundation (ESF).
3. Reviewer of Project Proposals within the Adjunct Research Professorship Program 2024 Call (Higher Education and Science Committee, Republic of Armenia).

Conferences and Events Organization

1. Prime organizing member of arXiv journal club@CCSP of The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR, India, which is the part of the regular academic activity of the centre.
2. Prime organizing member of CosmoCafe Seminar series talk of The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR, India, which is the part of the regular academic activity of the centre.
3. One of the organizers, secretary, and session chair of "ASTROCOSMOCON" conference which is going to happen at The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR, India, October 26- October 28, 2023.
4. One of the organizers, convenors, and sole anchor of "COSMOLOGY@CCSP_2" conference which is going to happen at The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR, India, November 29- December 1, 2023.
5. One of the organizers of "COSMOLOGY@CCSP_1" conference which was organized at The Thanu Padmanabhan Centre For Cosmology and Science Popularization (CCSP), Shree Guru Gobind Singh Tricentenary (SGT) University, Gurugram, Delhi-NCR, India, October 17-19, 2022.
6. Organizer of a very well-known virtual seminar series, known as, "Quantum Aspects of Spacetime & Matter (QASTM) Seminar series" via Zoom twice in each week where all the renowned experts from all over the globe speak for students and researchers in their expertise area of work. For more details see : YouTube link.

7. One of the organizers of "International Conference on Modern perspective of Cosmology and Gravitation (COSGRAV 12)", Indian Statistical Institute, Kolkata, India, February 7-11, 2012.

Science Popularization activities

1. Given a popular level interview (Scientific Podcast) in the forum *Physics for Students* on the future of Theoretical Physics, where I have covered the prospects, career option in this research field. I have specifically talked about the research opportunities in the fields of Theoretical Cosmology, High Energy Physics, Classical and Quantum Gravity, Mathematical Physics, and Quantum Information Theory. For more details see the YouTube link : Podcast Link. This Podcast was organized by Mr. Shounak Bhattacharya who is the founder of the forum *Physics for Students*.
2. Given a popular level interview (Scientific Podcast) in the forum *The Whimper Podcast* on the future of Theoretical Physics, where I have covered the prospects, career option in this research field. I have specifically talked about the research opportunities in the fields of Theoretical Cosmology, High Energy Physics and Quantum Information Theory. For more details see the YouTube link : Podcast Link. This Podcast was organized by Mr. Divyansh Gunjan who is the founder of the forum *The Whimper Podcast*.
3. Regular visitor and the local coordinator of the *TARAMANDAL : The Mobile planetarium program* in different schools in the nearby areas of Delhi-NCR and within SGT University.

Skills

Operating systems : Mac, Linux (Ubuntu, Fedora), Windows 7.

Programming languages : Fortran, C, C++, .

Office softwares : Microsoft Office, Open Office, Libre office, LaTeX.

Scientific softwares Mathematica, GnuPlot, Matlab, CAMB, BINGO, COSMOMC, ModeCode.

Languages : English, Hindi, Bengali, German (preliminary).

List of significant collaborators

1. Sudhakar Panda, Senior INSA Scientist and Former Director, NISER, Bhubaneswar, India.
2. Mohammad Sami, Senior Professor and Director, CCSP, SGT University, Gurugram, India.
3. Shiraz Minwalla, Professor, TIFR, Mumbai, India.
4. Anupam Mazumdar, Professor, University of Groningen, The Netherlands.
5. Soumitra SenGupta, Senior and AKR Chair Professor, IACS, Kolkata, India.
6. Supratik Pal, Professor and Head, PAMU, ISI, Kolkata.
7. Subhasish Banerjee, Professor and Head, Department of Physics, IIT Jodhpur, India.

To know about the complete list of co-authors and collaborators please visit, Inspire-hep link and Google Scholar link.

Scientific Publications

Published/Accepted Articles :

1. *Large fluctuations and Primordial Black Holes*, **Sayantan Choudhury**, M. Sami, Invited review written and accepted for publication in Physics Reports, Dedicated to the memory of Alexei A. Starobinsky, Physics Reports 1103 (2025) 1-276, arXiv:2407.17006 [gr-qc]. (Citation from Inspire-hep: 9)
2. *Regularized-Renormalized-Resummed loop corrected power spectrum of non-singular bounce with Primordial Black Hole formation*, **Sayantan Choudhury**, Ahaskar Karde, Sudhakar Panda, Soumitra SenGupta, European Physical Journal C 84 (2024) 9, 1149, arXiv:2405.06882 [astro-ph.CO]. (Citation from Inspire-hep: 11)
3. *Reconstructing inflationary potential from NANOGrav 15-year Data : A robust study using Non-Bunch Davies initial condition*, **Sayantan Choudhury**, Journal of High Energy Astrophysics 44 (2024) 220-242, arXiv:2410.11893 [gr-qc]. (Citation from Inspire-hep: 0)
4. *Schwinger-Keldysh path integral formalism for a Quenched Quantum Inverted Oscillator*, **Sayantan Choudhury**, Suman Dey, Rakshit Mandish Gharat, Saptarshi Mandal, Nilesh Pandey, Symmetry 16 (2024) 10, 1308,arXiv: 2210.01134 [hep-th]. (Citation from Inspire-hep: 1)

5. *Scalar induced gravity waves from ultra slow-roll Galileon inflation*, **Sayantan Choudhury**, Ahaskar Karde, Sudhakar Panda, M. Sami, Nuclear Physics B 1007 (2024) 116678, arXiv:2308.09273 [astro-ph.CO]. (Citation from Inspire-hep: **55**)
6. *Obviating PBH overproduction for SIGWs generated by Pulsar Timing Arrays in loop corrected EFT of bounce*, **Sayantan Choudhury**, Siddhant Ganguly, Sudhakar Panda, Soumitra SenGupta, Pranjal Tiwari, Journal of Cosmology and Astroparticle Physics 09 (2024) 013, arXiv:2407.18976 [astro-ph.CO]. (Citation from Inspire-hep: 8)
7. *No-go for the formation of heavy mass Primordial Black Holes in Single Field Inflation*, **Sayantan Choudhury**, Mayukh R. Gangopadhyay, M. Sami, European Physical Journal C 84 (2024) 9, 884, arXiv:2301.10000 [astro-ph.CO]. (Citation from Inspire-hep: **99**)
8. *Primordial non-Gaussianity as a saviour for PBH overproduction in SIGWs generated by Pulsar Timing Arrays for Galileon inflation*, **Sayantan Choudhury**, Kritartha Dey, Ahaskar Karde, Sudhakar Panda, M. Sami, Physics Letters B 856 (2024) 138925,arXiv:2310.11034 [astro-ph.CO]. (Citation from Inspire-hep: 45)
9. *Evading no-go for PBH formation and production of SIGWs using Multiple Sharp Transitions in EFT of single field inflation*, Gourab Bhattacharya, **Sayantan Choudhury**, Kritartha Dey, Saptarshi Ghosh, Ahaskar Karde, Navneet Suryaprakash Mishra, Physics of the Dark Universe 46 (2024) 101602,arXiv:2309.00973 [astro-ph.CO]. (Citation from Inspire-hep: 44)
10. *Large fluctuations in the Sky*, **Sayantan Choudhury**, Accepted for publication in Int. J. Mod. Phys. D (Special issue for Gravity Research Foundation 2024 Awards essays), arXiv:2401.10925 [astro-ph.CO]. (Citation from Inspire-hep: 14)
11. *Realisation of the ultra-slow roll phase in Galileon inflation and PBH overproduction*, **Sayantan Choudhury**, Ahaskar Karde, Sudhakar Panda, M. Sami, Journal of Cosmology and Astroparticle Physics 07 (2024) 034, arXiv:2401.10925 [astro-ph.CO]. (Citation from Inspire-hep: 30)
12. *Single field inflation in the light of Pulsar Timing Array Data : Quintessential interpretation of blue tilted tensor spectrum through Non-Bunch Davies initial condition*, **Sayantan Choudhury**, European Physical Journal C 84 (2024) 3, 278, arXiv:2307.03249 [astro-ph.CO]. (Citation from Inspire-hep: **75**)
13. *Primordial non-Gaussianity from ultra slow-roll Galileon inflation*, **Sayantan Choudhury**, Ahaskar Karde, Sudhakar Panda, M. Sami, Journal of Cosmology and Astroparticle Physics 01 (2024) 012, [arXiv:2306.12334 [astro-ph.CO]]. (Citation from Inspire-hep: 42)
14. *Entanglement negativity in de Sitter biverse from Stringy Axionic Bell pair : An analysis using Bunch-Davies vacuum*, **Sayantan Choudhury**, Fortschritte der Physik - Progress of Physics 202, 2300063, [arXiv:2301.05203 [hep-th]]. (Citation from Inspire-hep: 10)
15. *Quantum loop effects on the power spectrum and constraints on primordial black holes*, **Sayantan Choudhury**, Sudhakar Panda, M. Sami, Journal of Cosmology and Astroparticle Physics 11 (2023) 066, [arXiv:2303.06066 [astro-ph.CO]]. (Citation from Inspire-hep: **91**)
16. *Thermalization in Quenched Open Quantum Cosmology*, Subhasish Banerjee, **Sayantan Choudhury**, Satyaki Chowdhury, Johannes Knaute, Sudhakar Panda, K. Shirish, Nuclear Physics B 996 (2023) 116368, [arXiv: 2104.10692 [hep-th]]. (Citation from Inspire-hep: 24)
17. *Galileon inflation evades the no-go for PBH formation in the single-field framework*, **Sayantan Choudhury**, Sudhakar Panda, M. Sami, Journal of Cosmology and Astroparticle Physics 08 (2023) 078, [arXiv: 2304.04065 [astro-ph.CO]]. (Citation from Inspire-hep: **67**)
18. *PBH formation in EFT of single field inflation with sharp transition*, **Sayantan Choudhury**, Sudhakar Panda, M. Sami, Physics Letters B 845 (2023) 138123, [arXiv:2302.05655 [astro-ph.CO]]. (Citation from Inspire-hep: **95**)
19. *Krylov Complexity in Quantum Field Theory*, Kiran Adhikari, **Sayantan Choudhury**, Abhishek Roy, Nuclear Physics B 993 (2023) 116263, [arXiv: 2204.02250 [hep-th]]]. (Citation from Inspire-hep: **55**)
20. *Circuit Complexity in an interacting quenched Quantum Field Theory*, **Sayantan Choudhury**, Rakshit Mandish Gharat, Saptarshi Mandal, Nilesh Pandey, Published in Symmetry in a special issue section : Physics and Symmetry/Asymmetry, Special issue : "Symmetry and Asymmetry in Quantum Mechanics". Symmetry 2023, 15(3), 655,[arXiv: 2209.03372 [hep-th]]. (Citation from Inspire-hep: 9)

21. *Primordial Gravitational Wave Circuit Complexity*, Kiran Adhikari, **Sayantan Choudhury**, Hardey N. Pandya, Rohan Srivastava, Published in Symmetry in a special issue section : Physics and Symmetry/Asymmetry, Special issue : "Role of Black Holes in Testing Modified Theories of Gravity". Symmetry 2023, 15(3), 664,[arXiv: 2108.10334 [gr-qc]]. (Citation from Inspire-hep: 15)
22. *Causality Constraint on Circuit Complexity from COSMOEFT*, **Sayantan Choudhury**, Arghya Mukherjee , Nilesh Pandey, Abhishek Roy, Fortschritte der Physik - Progress of Physics, 71 (2023) 4-5, 2200199, [arXiv: 2111.11468 [hep-th]]. (Citation from Inspire-hep: 12)
23. *Circuit Complexity in Z_2 EEFT*, Kiran Adhikari, **Sayantan Choudhury**, Sourabh Kumar, Saptarshi Mandal, Nilesh Pandey, Abhishek Roy, Soumya Sarkar, Partha Sarker, Saadat Salman Shariff, Symmetry 15 (2023) 31, [arXiv: 2109.09759 [hep-th]]. (Citation from Inspire-hep: 13)
24. *Cosmological Krylov Complexity*, Kiran Adhikari, **Sayantan Choudhury**, Fortschritte der Physik - Progress of Physics, 70 (2022) 12, 2200126, [arXiv: 2203.14330 [hep-th]]. (Citation from Inspire-hep: 40)
25. *Cosmological Geometric Phase From Pure Quantum States : A study without/with having Bell's inequality violation*, **Sayantan Choudhury**, Fortschritte der Physik - Progress of Physics,70 (2022) 9-10,2100144, [arXiv: 2105.16254 [gr-qc]]. (Citation from Inspire-hep: 2)
26. *Four-mode squeezed states in de Sitter space : A study with two field interacting quantum system*, **Sayantan Choudhury**, Sudhakar Panda , Nilesh Pandey, Abhishek Roy, Fortschritte der Physik - Progress of Physics,70 (2022) 12, 2200124, [arXiv: 2203.15815 [gr-qc]]. (Citation from Inspire-hep: 6)
27. *Circuit Complexity From Supersymmetric Quantum Field Theory With Morse Function*, **Sayantan Choudhury**, Sachin Panner Selvam, K. Shirish, Symmetry 14 (2022) 1656, [arXiv:2101.12582 [hep-th]]. (Citation from Inspire-hep: 10)
28. *Entanglement in interacting quenched two-body coupled oscillator system*, **Sayantan Choudhury**, Rakshit Mandish Gharat, Saptarshi Mandal, Nilesh Pandey, Abhishek Roy, Partha Sarker, Physical Review D 106 (2022) 025002, [arXiv: 2204.05326 [hep-th]]. (Citation from Inspire-hep: 8)
29. *Indirect detection of Cosmological Constant from interacting open quantum system*, Subhasish Banerjee, **Sayantan Choudhury**, Satyaki Chowdhury, Rathindra Nath Das, Nitin Gupta, Sudhakar Panda, Abinash Swain, Annals of Physics 443 (2022) 168941, [arXiv:2004.13058 [hep-th]]. (Citation from Inspire-hep: 12)
30. *Wormhole calculus without averaging from $O(N)^{q-1}$ tensor model*, **Sayantan Choudhury**, K. Shirish, Physical Review D 105 (2022) 4, 046002, [arXiv: 2106.14886 [hep-th]]. (Citation from Inspire-hep: 11)
31. *Quantum Aspects of Chaos and Complexity from Bouncing Cosmology : A study with two-mode single field squeezed state formalism*, Parth Bhrgava, **Sayantan Choudhury**, Satyaki Chowdhury, Anurag Mishra, Sachin Panner Selvam, Sudhakar Panda, Gabriel D. Pasquino, SciPost Physics Core 4 (2021) 026, [arXiv:2009.03893 [hep-th]]. (Citation from Inspire-hep: 33)
32. *Circuit Complexity as a novel probe of Quantum Entanglement : A study with Black Hole Gas in arbitrary dimensions*, Kiran Adhikari, **Sayantan Choudhury**, Satyaki Chowdhury, K. Shirish, Abinash Swain, Physical Review D 104 (2021) 6, 065002, [arXiv: 2104.10692 [hep-th]]. (Citation from Inspire-hep: 24)
33. *Circuit Complexity From Cosmological Islands*, **Sayantan Choudhury**, Satyaki Chowdhury, Nitin Gupta, Anurag Mishra, Sachin Panner Selvam, Sudhakar Panda, Gabriel D. Pasquino, Chiranjeeb Singha, Abinash Swain, Published in Symmetry in a special issue "Physics and Symmetry Section : Manifest and Hidden Symmetries in Field and String Theories". Symmetry 13 (2021) no. 7, 1301, [arXiv:2012.10234 [hep-th]]. (Citation from Inspire-hep: **54**)
34. *Chaos and Complexity from Quantum Neural Network : A study with Diffusion Metric in Machine Learning*, **Sayantan Choudhury**, Ankan Dutta, Debisree Ray, Journal of High Energy Physics 04 (2021) 138, [arXiv:2011.07145 [hep-th]]. (Citation from Inspire-hep: 14)
35. *The Cosmological OTOC : A new proposal for quantifying auto-correlated random non-chaotic primordial fluctuations*, **Sayantan Choudhury**, Published in Symmetry in a special issue "Physics and Symmetry Section : Feature Papers 2021". Symmetry 13 (2021), no. 4, 599, [arXiv:2106.01305 [physics.gen-ph]]. (Citation from Inspire-hep: 21)

36. *QMetrology from QCosmology : Study with entangled Two qubit Open Quantum System in De Sitter Space*, **Sayantan Choudhury**, Satyaki Chowdhury, Nitin Gupta, Abinash Swain, SciPost Physics Core 4 (2021) 006, [arXiv:2005.13555 [hep-th]]. (Citation from Inspire-hep: 4)
37. *Relating the curvature of De Sitter Universe to Open Quantum Lamb Shift Spectroscopy*, Hardik Bohra, **Sayantan Choudhury**, Prashali Chauhan, Purnima Narayan, Sudhakar Panda, Abinash Swain, European Physics Journal C 81 (2021) 2, 196, [arXiv:1905.07403 [physics.gen-ph]]. (Citation from Inspire-hep: 19)
38. *The Generalized OTOC from Supersymmetric Quantum Mechanics : Study of Random Fluctuations from Eigenstate Representation of Correlation Functions*, Kaushik Yashwant Bhagat, Baibhab Bose, **Sayantan Choudhury**, Satyaki Chowdhury, Rathindra Nath Das, Saptarshhi G. Dastider, Nitin Gupta, Archana Maji, Gabriel D. Pasquino, Swaraj Paul, Symmetry 13 (2020) no.1, 44, [arXiv:2008.03280 [hep-th]]. (Citation from Inspire-hep: 19)
39. *The Cosmological OTOC : Formulating new cosmological micro-canonical correlation functions for random chaotic fluctuations in Out-of-Equilibrium Quantum Statistical Field Theory*, **Sayantan Choudhury**, Published in Symmetry in a special issue "New Advances of Cosmology and Astrophysics". Symmetry 12 (2020) no. 9, 1527, [arXiv:2005.11750 [hep-th]]. (Citation from Inspire-hep: 36)
40. *Open Quantum Entanglement : A study of two atomic system in static De Sitter space*, Samim Akhter, **Sayantan Choudhury**, Satyaki Chowdhury, Debopam Goswami, Sudhakar Panda, Abinash Swain, European Physics Journal C 80 (2020) no.8, 748, [arXiv: 1908.09929 [hep-th]]. (Citation from Inspire-hep: 31)
41. *Cosmological Spectrum of Two-Point Correlation Function from Vacuum Fluctuation of Stringy Axion Field in De Sitter Space : A Study of the Role of Quantum Entanglement*, **Sayantan Choudhury** and Sudhakar Panda, Universe 6 (2020) 79, [arXiv:1809.02905 [hep-th]]. (Citation from Inspire-hep: 21)
42. *Quantum randomness in the Sky*, **Sayantan Choudhury** and Arkaprava Mukherjee, European Physics Journal C 79 (2019) no.7, 554, [arXiv: 1812.04107 [physics.gen-ph]]. (Citation from Inspire-hep: 12)
43. *A bound on Quantum Chaos from Random Matrix Theory with Gaussian Unitary Ensemble*, **Sayantan Choudhury** and Arkaprava Mukherjee, Journal of High Energy Physics 1905 (2019) 149, [arXiv: 1811.01079 [hep-th]]. (Citation from Inspire-hep: 10)
44. *Quantum Out of equilibrium Cosmology*, **Sayantan Choudhury**, Arkaprava Mukherjee, Prashali Chauhan and Sandipan Bhattecherjee, European Journal of Physics C 79 (2019) no.4, 320,[arXiv:1809.02732 [hep-th]]. (Citation from Inspire-hep: 24)
45. *Quantum entangled de Sitter from Stringy Axion : An analysis using α vacua*, **Sayantan Choudhury** and Sudhakar Panda, Nuclear Physics B 943 (2019) 114606, [arXiv:1708.08299 [hep-th]]. (Citation from Inspire-hep: 34)
46. *CMB from EFT*, **Sayantan Choudhury**, Universe 5 (2019) no.6, 155, [arXiv:1712.04766[hep-th]]. (Citation from Inspire-hep: 30)
47. *Bose-Fermi Chern-Simons Dualities in the Higgsed Phase*, **Sayantan Choudhury**, Anshuman Dey, Indranil Halder, Lavneet Janagal, Sachin Jain, Shiraz Minwalla and Naveen Prabhakar, Journal of High Energy Physics 1811 (2018) 177, [arXiv:1804.08635 [hep-th]]. (Citation from Inspire-hep: 31)
48. *Entangled de Sitter from Stringy Axionic Bell pair I : An analysis using Bunch Davies vacuum*, **Sayantan Choudhury** and Sudhakar Panda, European Physics Journal C 78 (2018) no.1, 52, [arXiv:1708.02265 [hep-th]]. (Citation from Inspire-hep: 39)
49. *Notes on Melonic $O(N)^{q-1}$ Tensor Models*, **Sayantan Choudhury**, Anshuman Dey, Indranil Halder, Lavneet Janagal, Shiraz Minwalla and Rohan R. Poojary, Journal of High Energy Physics 1806 (2018) 094,[arXiv:1707.09352 [hep-th]]. (Citation from Inspire-hep: **82**)
50. *Fermion localization in higher curvature spacetime*, **Sayantan Choudhury**, Joydip Mitra and Soumitra SenGupta, Classical and Quantum Gravity 35 (2018) no.2,025007, [arXiv:1503.07287[hep-th]]. (Citation from Inspire-hep: 12)

51. *COSMOS-e'-soft Higgsotic attractors*, **Sayantan Choudhury**, European Physics Journal C 77 (2017) 7, 469, [arXiv:1703.01750[hep-th]]. (Citation from Inspire-hep: 30)
52. *Bell violation in the Sky*, **Sayantan Choudhury**, Sudhakar Panda and Rajeev Singh, European Physics Journal C 77 (2017) 2, 60, [arXiv:1607.00237[hep-th]]. (Citation from Inspire-hep: **65**)
53. *Can Dark matter be an artifact of extended theories of gravity ?*, **Sayantan Choudhury**, Manibrata Sen and Soumya Sadhukhan, European Physics Journal C 76 (2016) 9, 494, [arXiv:1512.08176 [hep-ph]]. (Citation from Inspire-hep: 18)
54. *Cosmos-e'-GTachyon from String Theory*, **Sayantan Choudhury**, and Sudhakar Panda, European Physics Journal C 76 (2016) 5, 278, [arXiv:1511.05734 [hep-th]]. (Citation from Inspire-hep: 34)
55. *Effective Field Theory of Dark Matter from membrane inflationary paradigm*, **Sayantan Choudhury**, and Arnab Dasgupta,Physics of the Dark Universe 13 (2016) 35-65, [arXiv:1510.08195 [hep-th]]. (Citation from Inspire-hep: 10)
56. *Reconstructing inflationary paradigm within Effective Field Theory framework*, **Sayantan Choudhury**, Physics of the Dark Universe 11 (2016) 16-48, [arXiv:1508.00269 [hep-th]]. (Citation from Inspire-hep: 31)
57. *Hysteresis in the Sky*, **Sayantan Choudhury**, and Shreya Banerjee, Astroparticle Physics 80 (2016) 34-89, [arXiv:1506.02260 [hep-th]]. (Citation from Inspire-hep: 14)
58. *Constraining brane inflationary magnetic field from cosmoparticle physics after Planck*, **Sayantan Choudhury**, Journal of High Energy Physics 10 (2015) 095, [arXiv:1504.08206 [astro-ph.CO]]. (Citation from Inspire-hep: 10)
59. *Quantum gravity effect in torsion driven inflation and CP violation*, **Sayantan Choudhury**, Barun Kumar Pal, Banasri Basu and Pratul Bandyopadhyay, Journal of High Energy Physics 10 (2015) 194 , [arXiv:1409.6036 [hep-th]]. (Citation from Inspire-hep: 14)
60. *Can Effective Field Theory of inflation generate large tensor-to-scalar ratio within Randall Sundrum single braneworld ?*, **Sayantan Choudhury**, Nuclear Physics B 894 (2015) 29-55, [arXiv:1406.7618 [hep-th]]. (Citation from Inspire-hep: 39)
61. *Primordial non-Gaussian features from DBI Galileon inflation*, **Sayantan Choudhury**, and Supratik Pal, European Physics Journal C 75 (2015) 6, 241, [arXiv:1210.4478 [hep-th]]. (Citation from Inspire-hep: **61**)
62. *Modulus stabilization in higher curvature dilaton gravity*, **Sayantan Choudhury**, Joydip Mitra and Soumitra SenGupta,Journal of High Energy Physics 08 (2014) 004, [arXiv:1405.6826 [hep-th]].(Citation from Inspire-hep: 13)
63. *Inflamagnetogenesis redux : Unzipping inflection-point inflation via various cosmoparticle probes*, **Sayantan Choudhury**, Physics Letters B 735 (2014) 138-145, [arXiv:1403.0676 [hep-th]]. (Citation from Inspire-hep: 12)
64. *Constraining $N = 1$ supergravity inflation with non-minimal Kähler operators using $\delta\mathcal{N}$ formalism*, **Sayantan Choudhury**, Journal of High Energy Physics 04(2014)105, [arXiv: 1402.1251[hep-th]]. (Citation from Inspire-hep: 37)
65. *Constraining $N = 1$ supergravity inflationary framework with non-minimal Kähler operators*, **Sayantan Choudhury**, Anupam Mazumdar and Ernestas Pukartas, Journal of High Energy Physics 04 (2014) 077, [arXiv: 1402.1227[hep-th]]. (Citation from Inspire-hep: 41)
66. *A step towards exploring the features of Gravidilaton sector in Randall-Sundrum scenario via lightest Kaluza-Klein graviton mass*, **Sayantan Choudhury** and Soumitra SenGupta, European Physics Journal C 74 (2014) 11, 3159, [arXiv: 1311.0730[hep-ph]]. (Citation from Inspire-hep: 15)
67. *Galileogenesis : A new cosmophenomenological zip code for reheating through R-parity violating coupling*, **Sayantan Choudhury** and Arnab Dasgupta, Nuclear Physics B 882 (2014) 195-204,[arXiv: 1309.1934[hep-ph]]. (Citation from Inspire-hep: 11)
68. *Primordial blackholes and gravitational waves for an inflection-point model of inflation*, **Sayantan Choudhury** and Anupam Mazumdar, Physics Letters B 733 (2014) 270-275,[arXiv: 1307.5119[astro-ph.CO]]. (Citation from Inspire-hep: **86**)
69. *Higgs inflation from new Kähler potential*, **Sayantan Choudhury**, Trina Chakraborty and Supratik Pal, Nuclear Physics B 880 (2014) 155-174, [arXiv: 1305.0981[hep-th]]. (Citation from Inspire-hep: 34)

70. *An accurate bound on tensor-to-scalar ratio and the scale of inflation*, **Sayantan Choudhury** and Anupam Mazumdar, Nuclear Physics B 882 (2014) 386-396, [arXiv: 1306.4496[hep-ph]]. (Citation from Inspire-hep: **75**)
71. *Low & High scale MSSM inflation, gravitational waves and constraints from Planck*, **Sayantan Choudhury**, Anupam Mazumdar and Supratik Pal, Journal of Cosmology and Astroparticle Physics 07 (2013) 041, [arXiv: 1305.6398[hep-ph]]. (Citation from Inspire-hep: **76**)
72. *Features of warped geometry in presence of Gauss-Bonnet coupling*, **Sayantan Choudhury** and Soumitra SenGupta, Journal of High Energy Physics 02 (2013) 136, [arXiv: 1301.0918[hep-th]].(Citation from Inspire-hep: 24)
73. *DBI Galileon inflation in background supergravity*, **Sayantan Choudhury** and Supratik Pal, Nuclear Physics B 874, 85-114 (2013), [arXiv: 1208.4433 [hep-th]]. (Citation from Inspire-hep: **55**)
74. *Fourth level MSSM inflation from new flat directions*, **Sayantan Choudhury** and Supratik Pal, Journal of Cosmology and Astroparticle Physics 04 (2012) 018,[arXiv: 1111.3441 [hep-ph]]. (Citation from Inspire-hep: 49)
75. *Reheating and leptogenesis in a SUGRA inspired brane inflation*, **Sayantan Choudhury** and Supratik Pal, Nuclear Physics B 857, 85-100 (2012), [arXiv: 1108.5676 [hep- ph]]. (Citation from Inspire-hep: 27)
76. *Brane inflation in background supergravity*, **Sayantan Choudhury** and Supratik Pal, Physical Review D 85, 043529 (2012), [arXiv: 1102.4206 [hep-th]]. (Citation from Inspire-hep: **51**)

Conference Proceedings :

1. *Bell violation in primordial cosmology*, **Sayantan Choudhury**, Sudhakar Panda and Rajeev Singh, Varying Constants and Fundamental Cosmology-VARCOSMOFUN'16, Universe 3(2017)13,[arXiv:1612.09445 [hep-th]]. (Citation from Inspire-hep: 29)
2. *From Extended theories of Gravity to Dark Matter*, **Sayantan Choudhury**, Manibrata Sen and Soumya Sadhukhan, Presented at the 52nd Winter School of Theoretical Physics (Ladek Zdroj, Poland), Acta Phys. Polon. Supp. 9 (2016) 789, [arXiv:1605.04043[hep-th]]. (Citation from Inspire-hep: 2)
3. *Cosmic Hysteresis*, **Sayantan Choudhury**, Shreya Banerjee, Proceedings of the Fourteenth Marcel Grossman Meeting on General Relativity at University of Rome "La Sapienza" - Rome, July 12-18, 2015, The Fourteenth Marcel Grossmann Meeting 4 (2017) 1247,[arXiv:1512.08360[hep-th]]. (Citation from Inspire-hep: 6)
4. *Brane inflation : A field theory approach in background supergravity*, **Sayantan Choudhury**, Supratik Pal, Proceedings of COSGRAV-2012, Journal of Physics: Conference Series 405 (2012) 012009, [arXiv: 1209.5883 [hep-th]]. (Citation from Inspire-hep: 29)

arXiv preprints and Submitted manuscripts to research journals :

1. *Negative non-Gaussianity as a salvager for PBHs with PTAs in bounce*, **Sayantan Choudhury**, Kritartha Dey, Siddhant Ganguly, Ahaskar Karde, Swapnil Kumar Singh, Pranjal Tiwari, arXiv:2409.18983 [astro-ph.CO]. (Citation from Inspire-hep: 0)
2. *Primordial Black Holes from Effective Field Theory of Stochastic Single Field Inflation at NNNLO*, **Sayantan Choudhury**, Ahaskar Karde, Pankaj Padiyar, M. Sami, arXiv:2403.07343 [astro-ph.CO]. (Citation from Inspire-hep: 15)

3. *Untangling PBH overproduction in w-SIGWs generated by Pulsar Timing Arrays for MST-EFT of single field inflation*, **Sayantan Choudhury**, Kritartha Dey, Ahaskar Karde, arXiv:2311.15065 [astro-ph.CO]. (Citation from Inspire-hep: 33)
4. *EFT of Inflation : Reflections on CMB and Forecasts on LSS Surveys*, Abhishek Naskar, **Sayantan Choudhury**, Argha Banerjee, Supratik Pal, arXiv: 1706.08051 [astro-ph.CO]. (Citation from Inspire-hep: 23)
5. *Sub-Planckian inflation & large tensor-to-scalar ratio with* $r \geq 0.1$, **Sayantan Choudhury**, Anupam Mazumdar, arXiv: 1404.3398 [hep-th]. (Citation from Inspire-hep: 27)
6. *Reconstructing inflationary potential from BICEP2 and running of tensor modes*, **Sayantan Choudhury**, Anupam Mazumdar, arXiv: 1403.5549 [hep-th]. (Citation from Inspire-hep: **97**)
7. *Collider constraints on Gauss Bonnet coupling on warped geometry model*, **Sayantan Choudhury**, Soumya Sadhukhan, Soumitra SenGupta, arXiv: 1308.1477 [hep-th]. (Citation from Inspire-hep: 13)
8. *Thermodynamics of charged Kalb Ramond AdS black hole in presence of Gauss Bonnet coupling*, **Sayantan Choudhury**, Soumitra SenGupta, arXiv: 1306.0492 [hep-th]. (Citation from Inspire-hep: 15)

Invited Review :

Large fluctuations and Primordial Black Holes, **Sayantan Choudhury**, M. Sami, Invited review written and accepted for publication in Physics Reports, Dedicated to the memory of Alexei A. Starobinsky, Physics Reports 1103 (2025) 1-276, arXiv:2407.17006 [gr-qc]. (Citation from Inspire-hep: 9)

Book Published :

Title of the Book : Quantum Field Theory Approaches to Early Universe Cosmology
Author : Sayantan Choudhury
ISBN-13 : 978-613-9-84090-8,
Lap Lambert Academic Publishing. (Citation from Inspire-hep: 4)
Amazon link to buy
Lap Lambert Academic Publishing house link to buy

Ph.D. thesis details :

Title of the thesis : Field Theoretic Approaches to Early Universe
Advisor : Dr. Supratik Pal
e-link : *Field Theoretic Approaches To Early Universe*, **Sayantan Choudhury**, [arXiv:1603.08306 [hep-th]]. (Citation from Inspire-hep: 11)

Best published/accepted papers based on highest citations :

1. *Scalar induced gravity waves from ultra slow-roll Galileon inflation*, **Sayantan Choudhury**, Ahaskar Karde, Sudhakar Panda, M. Sami, Nuclear Physics B 1007 (2024) 116678, arXiv:2308.09273 [astro-ph.CO]. (Citation from Inspire-hep: **55**)
2. *No-go for the formation of heavy mass Primordial Black Holes in Single Field Inflation*, **Sayantan Choudhury**, Mayukh R. Gangopadhyay, M. Sami, European Physical Journal C 84 (2024) 9, 884, arXiv:2301.10000 [astro-ph.CO]. (Citation from Inspire-hep: **99**)
3. *Single field inflation in the light of Pulsar Timing Array Data : Quintessential interpretation of blue tilted tensor spectrum through Non-Bunch Davies initial condition*, **Sayantan Choudhury**, *Accepted for publication in European Physical Journal C*, arXiv:2307.03249 [astro-ph.CO]. (Citation from Inspire-hep: **75**)

4. *Galileon inflation evades the no-go for PBH formation in the single-field framework*, **Sayantan Choudhury**, Sudhakar Panda, M. Sami, Journal of Cosmology and Astroparticle Physics 08 (2023) 078, [arXiv: 2304.04065 [astro-ph.CO]]. (Citation from Inspire-hep: **67**)
5. *Quantum loop effects on the power spectrum and constraints on primordial black holes*, **Sayantan Choudhury**, Sudhakar Panda, M. Sami, Journal of Cosmology and Astroparticle Physics 11 (2023) 066, [arXiv:2303.06066 [astro-ph.CO]]. (Citation from Inspire-hep: **91**)
6. *PBH formation in EFT of single field inflation with sharp transition*, **Sayantan Choudhury**, Sudhakar Panda, M. Sami, Physics Letters B 845 (2023) 138123, [arXiv:2302.05655 [astro-ph.CO]]. (Citation from Inspire-hep: **95**)
7. *Krylov Complexity in Quantum Field Theory*, Kiran Adhikari, **Sayantan Choudhury**, Abhishek Roy, Nuclear Physics B 993 (2023) 116263, [arXiv: 2204.02250 [hep-th]]]. (Citation from Inspire-hep: **55**)
8. *Circuit Complexity From Cosmological Islands*, **Sayantan Choudhury**, Satyaki Chowdhury, Nitin Gupta, Anurag Mishra, Sachin Panner Selvam, Sudhakar Panda, Gabriel D. Pasquino, Chiranjeeb Singha, Abinash Swain, Published in Symmetry in a special issue "Physics and Symmetry Section : Manifest and Hidden Symmetries in Field and String Theories". Symmetry 13 (2021) no. 7, 1301, [arXiv:2012.10234 [hep-th]]. (Citation from Inspire-hep: **54**)
9. *Notes on Melonic $O(N)^{q-1}$ Tensor Models*, **Sayantan Choudhury**, Anshuman Dey, Indranil Halder, Lavneet Janagal, Shiraz Minwalla and Rohan R. Poojary, Journal of High Energy Physics 1806 (2018) 094,[arXiv:1707.09352 [hep-th]]. (Citation from Inspire-hep: **82**)
10. *Bell violation in the Sky*, **Sayantan Choudhury**, Sudhakar Panda and Rajeev Singh, European Physics Journal C 77 (2017) 2, 60, [arXiv:1607.00237[hep-th]]. (Citation from Inspire-hep: **65**)
11. *Primordial non-Gaussian features from DBI Galileon inflation*, **Sayantan Choudhury**, and Supratik Pal, Eur.Phys.J.C 75 (2015) 6, 241, [arXiv:1210.4478 [hep-th]]. (Citation from Inspire-hep: **61**)
12. *Primordial blackholes and gravitational waves for an inflection-point model of inflation*, **Sayantan Choudhury** and Anupam Mazumdar, Physics Letters B 733 (2014) 270-275,[arXiv: 1307.5119[astro-ph.CO]]. (Citation from Inspire-hep: **86**)
13. *An accurate bound on tensor-to-scalar ratio and the scale of inflation*, **Sayantan Choudhury** and Anupam Mazumdar, Nuclear Physics B 882 (2014) 386-396, [arXiv: 1306.4496[hep-ph]]. (Citation from Inspire-hep: **75**)
14. *Low & High scale MSSM inflation, gravitational waves and constraints from Planck*, **Sayantan Choudhury**, Anupam Mazumdar and Supratik Pal, Journal of Cosmology and Astroparticle Physics 07 (2013) 041, [arXiv: 1305.6398[hep-ph]]. (Citation from Inspire-hep: **76**)
15. *DBI Galileon inflation in background supergravity*, **Sayantan Choudhury** and Supratik Pal, Nuclear Physics B 874, 85-114 (2013), [arXiv: 1208.4433 [hep-th]]. (Citation from Inspire-hep: **55**)
16. *Brane inflation in background supergravity*, **Sayantan Choudhury** and Supratik Pal, Physical Review D 85, 043529 (2012), [arXiv: 1102.4206 [hep-th]]. (Citation from Inspire-hep: **51**)

Total citation count and related statistics :

From Inspire-hep link:

Total citations (published papers) : 2405, h-index : 31.
Total citations (published+communicated papers) : 2702, h-index : 32.

From Google Scholar link:

Total citations (published+communicated papers) : 2987, h-index : 34, i10-index : 80.

Short Significant Academic Visits

- **Academic Visitor**, from 08/11/2019 to 24/11/2019,
  Perimeter Institute for Theoretical Physics (PITP), Ontario, Canada.
  Invited by Prof. Latham Boyle from the Cosmology Group, PITP.

- **Academic Visitor**, from 24/11/2019 to 28/11/2019,
  Simons Center for Geometry and Physics (SCGP) : Stony Brook University, USA.
  Invited by Prof. Zohar Komargodski from SCGP.

- **Academic Visitor**, on 04/12/2019,
  Department of Physics, Princeton University (PU), USA.
  Invited by Prof. Paul J. Steinherdt.

- **Academic Visitor**, from 05/12/2019 to 09/12/2019,
  Eberly College of Science, Penn State University (PSU), USA.
  Invited by Prof. Martin Bojowald.

- **Academic Visitor**, from 25/06/2019 to 04/07/2019 and 01/01/2020 to 07/01/2020,
  Department of Theoretical Physics (DTP),
  Tata Institute of Fundamental Research (TIFR), Mumbai, India.
  Invited by Director and Senior Prof. Sandip Trivedi, Prof. Gautam Mandal, and Prof. Shiraz Minwalla.

- **Academic Visitor**, from 03/06/2019 to 17/06/2019, 19/01/2020 to 27/01/2020,
  National Institute for Science Education and Research (NISER), Bhubaneswar, India.
  Invited by Director and Senior Prof. Sudhakar Panda.

- **Academic Visitor**, from 14/07/2016 to 29/07/2016, 16/10/2016 to 29/10/2016, 31/01/2017 to 11/02/2017, 7/07/2017 to 24/07/2017,
  Institute of Physics (IOP), Bhubaneswar, India.
  Invited by Director and Senior Prof. Sudhakar Panda.

Invited speaker in workshop/conference

1. Invited at *CosmoMingle@PAMU,ISI, Kolkata*, from 15/01/2024 to 16/01/2024 to give a plenary talk titled **No go to Go for PBH formation : An ultimate roadmap to Primordial Cosmology**. I have also chaired a session on 16/01/2024 in this mentioned workshop. Invited by Professor Supratik Pal from PAMU, ISI, Kolkata for the workshop.
2. Invited at *Indo-South Africa Workshop on Astrophysics (ISAWA-2023) at the Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi*, on 29/09/2023 to give aplenary talk titled **Quantum Field Theory Primer of PBH formation : An ultimate roadmap for Cosmology**. Invited by Professor Sushant G. Ghosh from CTP, Jamia for the workshop.
3. Invited at *Current topics in String theory at NISER, Bhubaneswar*, from 24/04/2023 to 26/04/2023 to give a plenary talk titled **No-go for the formation of heavy mass Primordial Black Holes in Single Field Inflation**. Invited by string theory group at NISER, Bhubaneswar.
4. Invited participant speaker at *AAPCOS 2020, Saha Institute of Nuclear Physics, Kolkata* from 06/01/2020 to 10/01/2020. Given an invited talk titled **Cosmology Meets Condensed Matter Physics**.
5. Invited Speaker at *Mini Workshop on Recent developments in String Theory and Cosmology (Sudhakar fest for 60th year birthday celebration), NISER, Bhubaneswar*, 28/03/2019 to 31/03/2019. Delivered an invited talk titled **Open Quantum Theory of Two entangled atoms in de Sitter space** on 31/03/2019. Invited by Prof. Sayantani Bhattacharya and Prof. Nishikanta Khandai from NISER, Bhubaneswar.
6. Invited Speaker at *XXXI Workshop beyond the Standard Model, Physikzentrum Bad Honnef*, 11/03/2019 to 14/03/2019. Delivered an invited talk titled **Geometry of our Universe from Lamb Shift Spectroscopy : A study of Open Quantum Many-Body Entangled System** on 14/03/2019.

7. Invited Speaker at *The Universe as a Quantum Lab, APC, Paris*, 19/09/2018 to 21/09/2018. Delivered an invited talk titled **Quantum entanglement in De Sitter cosmology : A study using stringy Axion with Bunch Davies and alpha vacua** on 21/09/2018. Invited by Prof. Jerome Martin and Prof. Vincent Vennin.
8. Invited participant speaker at *European Einstein Toolkit Meeting, Instituto Superior Tecnico, Centra, Lisbon*, 10/09/2018 to 13/09/2018. Given an invited talk titled **Quantum Out-of-equilibrium Cosmology** on 13/09/2018.
9. Invited participant speaker in *Spring cosmology meeting 2018 at DESY, Zeuthen, Germany.* Also presented a talk titled **Inflation to Large Scale Structures : EFT all the way** on 18/05/2018.
10. Delivered an invited talk on **Bell violation in the Sky** in *Saha Theory Workshop : Aspects of Early Universe Cosmology at Saha Institute of Nuclear Physics, Kolkata* on 18/01/2017.
11. Delivered an invited talk on **Effective Field Theory of Cosmological Collider Physics** in *COSMOASTRO 2015 : A discussion Meeting on Cosmology and Astroparticle Physics at Institute of Physics (IOP), Bhubaneswar, India* on 5/11/2015. Invited by Prof. Ajit Mohan Srivastava and Director and Senior Prof. Sudhakar Panda.
12. Delivered an invited talk on **Constraining $N = 1$ supergravity inflationary framework with non-minimal Kähler operators** in *Saha Theory Workshop : Cosmology at the interface at Saha Institute of Nuclear Physics, Kolkata* on 29/01/2015.
13. Delivered a talk on **Constraining $N = 1$ supergravity inflationary framework with non-minimal Kähler operators** in *Workshop on Cosmology with Large Scale Structure at Centre for Theoretical Physics (CTP), Jamia Millia Islamia (JMI), New Delhi* on 06/01/2015.

Invited speaker in seminar

1. Invited at *Kavli IPMU, University of Tokyo, Japan* on 12/03/2023 to give a virtual seminar titled **No-go for the formation of heavy mass Primordial Black Holes in Single Field Inflation**. Invited by Prof. Misao Sasaki and Dr. Vicharit Yingcharoenrat.
2. Invited at *Institute of Theoretical Physics, Chinese Academy of Sciences, China*, on 11/03/2023 to give a virtual seminar titled **No-go for the formation of heavy mass Primordial Black Holes in Single Field Inflation**. Invited by Prof. Rong-Gen Cai, Prof. Zong-Kuan Guo, Prof. Li Li, and Prof. Shi Pi.
3. Invited at *at School of Basic Science, Indian Institute of Technology Bhilai, India*, on 02/09/2021 to give a virtual seminar titled **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space**. Invited by Prof. Sudhanwa Patra, Head of the Department of Physics, IIT, Bhilai.
4. Invited at *School of Basic Science, Indian Institute of Technology Mandi, India*, on 01/06/2021 to give a virtual seminar titled **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space and Application of Tensor Analysis in Physics**. Invited by Prof. Hari Varma and Prof. C. S. Yadav.
5. Invited at *Van Swinderen Institute for Particle Physics and Gravity University of Groningen, The Netherlands*, on 20/05/2021 to give a virtual Van Swinderen Institute seminar titled **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space**. Invited by Senior Prof.Anupam Mazumdar.
6. Invited at *Indian Institute of Technology, Mumbai, India*, on 04/02/2020 to give a talk titled **Cosmology Meets Condensed Matter Physics**, at departmental physics seminar. Invited by Prof. S. Uma Shankar.
7. Invited at *String Theory Seminar, Indian Institute of Science (IISc), Bengaluru.* Delivered an invited talk titled **Cosmology Meets Condensed Matter Physics**, on 29/01/201920. Invited by Prof. Aninda Sinha for the visit.
8. Invited at *Raman Research Institute, Bengaluru, India*, from 27/01/2020 to 31/01/2020 to give a talk titled **Cosmology Meets Condensed Matter Physics**, at Departmental Astrophysics seminar. Invited by Dr. Anjan Sarkar.
9. Invited at *Indian Institute of Technology, Bhubaneswar, India*, on 24/01/2020 to give a talk titled **Cosmology Meets Condensed Matter Physics**, at Departmental physics seminar. Invited by Prof. Abhishek Chowdhury.

10. Invited to visit at *National Institute for Science Education and Research (NISER), Bhubaneswar, India*, from 19/01/2020 to 27/01/2020. Given an invited talk titled **Cosmology Meets Condensed Matter Physics**, at Departmental physics seminar. Invited by Senior Prof. and Director Sudhakar Panda.
11. Invited at *Scottish Church College, Kolkata, India*, on 17/01/2020 to visit the Physics Department. Given an invited talk titled **Cosmology Meets Condensed Matter Physics**, at Departmental physics reunion seminar. Invited by Prof. Joydip Mitra.
12. Invited at *National Institute of Technology (NIT), Rourkela, India*, from 14/01/2020 to 15/01/2020 visit the Physics Department. Given an invited talk titled **Cosmology Meets Condensed Matter Physics**, at Departmental physics seminar. Invited by PhD student Mr. Abhishek Mahapatra.
13. Invited at *Eberly College of Science, Penn State University (PSU), USA*, from 05/12/2019 to 09/12/2019. Given an invited talk titled **Cosmology Meets Condensed Matter Physics : A study of out-of-equilibrium physics**, at Departmental FTheory seminar. Invited by Prof. Martin Bojowald.
14. Invited at *Department of Physics, Princeton University (PU), USA*, on 04/12/2019. Given an invited talk titled **Cosmology Meets Condensed Matter Physics : A study of out-of-equilibrium physics**. Invited by Prof. Paul J. Steinherdt.
15. Invited at *Simons Center for Geometry and Physics (SCGP) : Stony Brook University, USA*, from 24/11/2019 to 28/11/2019. Given an invited talk titled **Cosmology Meets Condensed Matter Physics : A study of out-of-equilibrium physics**. Invited by Prof. Zohar Komargodski.
16. Invited at *Perimeter Institute for Theoretical Physics (PITP), Ontario, Canada*, from 08/11/2019 to 24/11/2019. Given an invited talk titled **Cosmology Meets Condensed Matter Physics : A study of out-of-equilibrium physics**, at Cosmology Seminar. Invited by Prof. Latham Boyle from the Cosmology Group, PITP.
17. Invited at *Quantum Spacetime Seminar, Quantum Spacetime Group (Formerly known as String Theory and Mathematical Physics Group), Department of Theoretical Physics (DTP), Tata Institute of Fundamental Research (TIFR), Mumbai.* Delivered an invited talk titled **Open Quantum Field Theory of Two entangled atoms in De Sitter space**, on 02/07/2019. Invited by Director and Senior Prof. Sandip Trivedi, Prof. Gautam Mandal, and Prof. Shiraz Minwalla.
18. Invited at *String Theory Seminar, Indian Institute of Science (IISc), Bengaluru.* Delivered an invited talk titled **Open Quantum Field Theory of Two entangled atoms in De Sitter space**, on 21/06/2019. Invited by Prof. Aninda Sinha for the visit.
19. Invited at *Astrophysics Seminar, Raman Research Institute (RRI), Bengaluru..* Delivered two invited talks titled **Out of equilibrium Cosmology** on 24/06/2019 and **Open Quantum Field Theory of Two entangled atoms in De Sitter space**, on 20/06/2019. Invited by Dr. Anjan Sarkar.
20. Invited at *Theoretical Physics Seminar, National Institute of Science Education and Research (NISER), Bhubaneswar.* Delivered an invited talk titled **Quantum entanglement in De Sitter space using Bunch Davies and alpha vacua**, on 14/06/2019. Invited by Director and Senior Prof. Sudhakar Panda for the visit from 3/06/2019 to 17/06/2019.
21. Invited at *Physics & Applied Mathematics Seminar, Physics & Applied Mathematics Unit (PAMU), Indian Statistical Institute (ISI), Kolkata.* Delivered an invited talk titled **Quantum entanglement in De Sitter space**, on 28/05/2019. Invited by Head and Senior Prof. Guruprasad Kar and my supervisor Prof. Supratik Pal.
22. Invited at *Gravity Seminar, School of Physical Sciences, Theoretical Physics, IACS, Kolkata.* Delivered an invited talk titled **Quantum entanglement in De Sitter space**, on 29/05/2019. Invited by Dean and Senior Prof. Soumitra SenGupta.
23. Invited at *Theoretical Physics Seminar, Theory Division, Saha Institute of Nuclear Physics, Kolkata.* Delivered an invited talk titled **Quantum entanglement in De Sitter space**, on 29/05/2019. Invited by Senior Prof. Shibaji Roy and Prof. Arnab Kundu for the visit.

24. Invited at *Theoretical Physics Seminar, Institute of Physics (IOP), Bhubaneswar*. Delivered an invited talk titled **Inflation to Large Scale Structures : EFT all the way**, on 20/07/2017. Invited by Director and Senior Prof. Sudhakar Panda for the visit from 7/07/2017 to 24/07/2017.
25. Invited at *Theoretical Physics Seminar, Institute of Physics (IOP), Bhubaneswar*. Delivered an invited talk titled **Warped Braneworld from higher derivative gravity**, on 10/01/2017. Invited by Director and Senior Prof. Sudhakar Panda for the visit from 31/01/2017 to 11/02/2017.
26. Invited at *Physics & Applied Mathematics Unit (PAMU), Indian Statistical Institute (ISI), Kolkata, India*, from 18/05/2015 to 19/05/2015. Invited by my supervisor Prof. Supratik Pal to deliver lectures on **Effective Field Theory of inflation**.
27. Delivered two invited talks on **Bell Violation in the Sky** and **CMB from EFT** in *High Energy Physics Colloquium, Institute of Physics (IOP), Bhubaneswar*, on 28/10/2016 and 26/10/2016 respectively. Visited from 16/10/2016 to 29/10/2016 Invited by Director and Senior Prof. Sudhakar Panda.
28. Delivered a talk on **Cosmos-e'-Gtachyon from String Theory** in *High Energy Physics Colloquium, Institute of Physics (IOP), Bhubaneswar*, on 27/07/2016. Visited from 14/07/2016 to 29/07/2016 Invited by Director and Senior Prof. Sudhakar Panda.

Contributed speaker in workshop/conference

1. Presented a contributed poster titled, **Wormhole without averaging from $O(N)^{q-1}$ tensor model** in the online poster session at "*Quantum extreme universe from quantum information - YITP Kyoto Workshop*" via Zoom (Online) from 26/09/2022 to 30/09/2022.
2. Delivered a contributed talk titled, **Wormhole calculus without averaging from $O(N)^{q-1}$ tensor model** in the parallel session B at "*Strings and Fields 2021 - YITP Kyoto Workshop*" via Zoom (Online) from 23/09/2021 to 27/08/2021.
3. Presented a contributed poster titled, **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space** at "*Amplitudes 2021-Niels Bohr Institute, Copenhagen*" via Zoom (Online) from 16/08/2021 to 20/08/2021.
4. Delivered a contributed talk titled, **The Cosmological OTOC** at "*Symmetry 2021 - The 3rd International Conference on Symmetry*" via Zoom (Online) from 08/08/2021 to 13/08/2021.
5. Delivered a contributed talk titled, **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space**, and also presented a poster titled **Circuit Complexity From Cosmological Islands** at "*Higher Structures in QFT and String Theory : A Virtual Conference for Junior Researchers (JrQFTConf 2021)*" via Zoom (Online) from 12/07/2021 to 16/07/2021.
6. Presented two contributed posters in the poster session titled, **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space**, and **Circuit Complexity From Cosmological Islands** at "*Strings 2021, ICTP-SAIFR, Sau Paulo, Brazil*" via Zoom (Online) from 21/06/2021 to 02/07/2021.
7. Delivered a contributed talk titled, **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space** in the String and Field parallel session (8B) at "*PASCOS 2021-26th International Symposium on Particle Physics, String Theory, and Cosmology*" via Zoom (Online) from 14/06/2021 to 18/06/2021.
8. Delivered a contributed talk titled, **Thermalization Phenomena in Quenched Quantum Brownian Motion in De Sitter Space** at "**Quantum Gravity and Modularity workshop**" which was organized by *Hamilton Mathematics Institute, Trinity College, Dublin (supported by HMI, IRC, Simons Foundation, and SFI)*, via Zoom (Online) from 03/05/2021 to 14/05/2021.
9. Delivered a contributed talk titled, **The Cosmological OTOC** at "**15 th Iberian Cosmology Meeting (IberiCOS 2021)**", jointly organized by *The University of Coimbra and Instituto Superior Tecnico, University of Lisbon, Portugal* via Zoom (Online) from 29/03/2021 to 01/04/2021.

10. Delivered a contributed talk titled, **The Cosmological OTOC**, in the gong show and also presented a poster titled **The Generalized OTOC from Supersymmetric Quantum Mechanics** at "*Hamilton School on Mathematical Physics 2020, Digital School by Trinity College Dublin*", via Zoom (Online) from from 24/08/2020 to 28/08/2020.
11. Presented seven contributed talks in different parallel sessions, **CMB from EFT, Inflation to Large Scale Structures : EFT all the way, Bell violation in Primordial Cosmology, Bose-Fermi Chern-Simons Dualities in the Higgsed Phase, Quantum Entanglement in De-Sitter space with Stringy Axion, Cosmos-e'-soft Higgsotic attractors, Can Dark Matter be an artifact of extended theories of gravity ?** at "*15th Marcel Grossmann Meeting, La Sapienza University, Rome, Italy*", from 01/07/2018 to 07/07/2018.
12. Presented a contributed poster titled, **Quantum Entanglement in De-Sitter space with Stringy Axion** at "*Summer School on Cosmology 2018 at ICTP, Trieste, Italy*", from 18/06/2018 to 29/06/2018.
13. Delivered two contributed talks on **Constraining brane inflationary magnetic field from cosmoparticle physics after Planck** in Cosmology session and on **Modulus stabilization in higher curvature dilaton gravity** in Quantum gravity session of *"ICGC 2015, IISER, Mohali, India"* from 14/12/2015 to 18/12/2015.
14. Delivered a contributed talk on **Features of warped geometry in presence of Gauss-Bonnet coupling** in *"SUSY2013 conference at ICTP, Trieste, Italy"* on 29/08/2013.
15. Delivered a contributed talk on **Large non-Gaussianity from DBI Galileon in background supergravity and sensitivity problem** in *"27th IAGRG MEET, 2013, Garhwal Bahuguna University, Shrinagar"*, from 07/03/2013 to 09/03/2013.
16. Presented a poster on **Brane Inflation : A cosmo-phenomenological approach in background supergravity** in *"Summer School on Cosmology 2012, ICTP, Trieste, Italy"* from 16/07/2012 to 27/07/2012.
17. Delivered a contributed talk on **Brane inflation in background supergravity** in *"COSGRAV12"* held from 07/02/2012 to 11/02/2012 at *Indian Statistical Institute, Kolkata, India.*

Participant in workshop/conference

1. Registered participant at *"Quantum extreme universe from quantum information - YITP Kyoto Workshop"* via Zoom (Online) from 26/09/2022 to 30/09/2022.
2. Registered participant at *"Kavli Asian Winter School Strings, Particles and Cosmology (Online) 2022"* at *ICTS, TIFR, Bengaluru* via Zoom from 10/01/2022 to 23/01/2022.
3. Registered participant at *"Physics of the Early Universe (Hybrid) 2022"* at *ICTS, TIFR, Bengaluru* via Zoom from 03/01/2022 to 12/01/2022.
4. Registered participant at *"Indian String Meet 2021"* at *IIT, Roorkee* via Zoom (Online) from 12/12/2021 to 17/12/2021.
5. Registered participant at *"String Field Theory@Cloud 2021"* via Zoom (Online) from 20/09/2021 to 24/09/2021.
6. Registered participant at *"Strings and Fields 2021 - YITP Kyoto Workshop"* via zoom (Online) from 23/08/2021 to 27/08/2021.
7. Registered participant at *"Amplitudes 2021-Niels Bohr Institute, Copenhagen"* via Zoom (Online) from 16/08/2021 to 20/08/2021.
8. Registered participant at *"Symmetry 2021 - The 3rd International Conference on Symmetry"* via Zoom (Online) from 08/08/2021 to 13/08/2021.
9. Registered participant at *"Gauge/Gravity Duality 2021 CERN"* via Zoom (Online) from 26/07/2021 to 28/07/2021.
10. Registered participant at *"Higher Structures in QFT and String Theory : A Virtual Conference for Junior Researchers (JrQFTConf 2021)"* via Zoom (Online) from 12/07/2021 to 16/07/2021.
11. Registered participant at *"Strings 2021, ICTP-SAFIR, Sao Paulo, Brazil"* via Zoom (Online) from 21/06/2021 to 02/07/2021.

12. Registered participant at *"String Math 2021, IMPA, Rio de Janeiro, Brazil"* via Zoom (Online) from 14/06/2021 to 18/06/2021.
13. Registered participant at *"Preparatory school Pre-Strings 2021, Natal, Brazil"* via Zoom (Online) from 14/06/2021 to 18/06/2021.
14. Registered participant at *"PASCOS 2021-26th International Symposium on Particle Physics, String Theory, and Cosmology"* via Zoom (Online) from 14/06/2021 to 18/06/2021.
15. Registered participant at *"Number Theory, Strings, and Quantum Physics"* via Zoom (Online) from 31/05/2021 to 05/06/2021.
16. Registered participant at *"Quantum Gravity and Modularity workshop which was organized by Hamilton Mathematics Institute, Trinity College, Dublin (supported by HMI, IRC, Simons Foundation and SFI)"* via Zoom (Online) from 03/05/2021 to 14/05/2021.
17. Registered participant at *"15th Iberian Cosmology Meeting (IberiCOS 2021) which was jointly organized by the University of Coimbra and Instituto Superior Tecnico, University of Lisbon, Portugal"* via Zoom (Online) from 29/03/2021 to 01/04/2021.
18. Registered participant in the *"Physics of the Early Universe - An Online Precursor, ICTS-TIFR, Bengaluru"* via Zoom (Online) from 31/08/2020 to 03/09/2020.
19. Registered participant in the *"Hamilton School on Mathematical Physics 2020, Digital School by Trinity College Dublin"* via Zoom (Online) from 24/08/2020 to 28/08/2020.
20. Registered participant in the *"String Math 2020, Cape Town, South Africa"* via Zoom (Online) from 27/07/2020 to 31/07/2020.
21. Registered participant in the *"Virtual Strings 2020, Cape Town, South Africa"* via Zoom (Online) from 29/06/2020 to 03/07/2020.
22. Registered participant in the *"Workshop on Complexity from Quantum Information to Black Holes"* via Zoom (Online) from 02/06/2020 to 05/06/2020.
23. Invited participant at *"It from Qubit Workshop"* at *Institute for Advanced Studies (IAS), Princeton* from 02/12/2019 to 05/12/2019. Invited by Prof. Juan M. Maldacena for the workshop.
24. Participant of the *"Summer School on Paradoxes in Quantum Mechanics"* at *The John Bell Institute for Foundational Physics, Hvar Island, Croatia* from 01/09/2019 to 06/09/2019.
25. Registered participant in *"15th Marcel Grossmann Meeting, La Sapienza University, Rome, Italy"*, from 1/07/2018 to 7/07/2018.
26. Registered participant in *"Summer School on Cosmology 2018 at ICTP, Trieste, Italy"* from 18/06/2018 to 29/06/2018.
27. Registered participant at *"ICGC 2015, IISER, Mohali, India"* from 14/12/2015 to 18/12/2015.
28. Registered participant at *"SUSY2013 conference"* and *"Pre-SUSY school"* at *ICTP, Trieste, Italy* from 19/08/2013 to 1/09/2013.
29. Registered participant at *"27th IAGRG MEET, 2013, Garhwal Bahuguna University, Shrinagar"* from 07/03/2013 to 09/03/2013.
30. Registered participant in *"Summer School on Cosmology 2012 at ICTP, Trieste, Italy"* from 16/07/2012 to 27/07/2012.

LINKS OF THE SOME USEFUL TALKS

1. Talk at *Perimeter Institute for Theoretical Physics (PITP), Ontario, Canada.*
   Link of the talk : Talk on Cosmology from Condensed Matter Theory (A study of out-of-equilibrium physics)
2. Talk at *Simons Center for Geometry and Physics (SCGP) : Stony Brook University, USA.*
   Link of the talk : Talk on Cosmology from Condensed Matter Physics: A study of out-of-equilibrium physics
3. Quantum Spacetime Seminar at String Theory Group of *Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai, India.*
   Link of the talk : Talk on Open Quantum Theory of Two entangled atoms in de Sitter space
4. Talk at *PASCOS 2021.*
   Link of the talk : Talk on Thermalization Phenomena in Quenched Quantum Brownian Motion in de Sitter Space

Professional References

1. **Prof. Sudhakar Panda**
   INSA Senior Scientist at NISER, Bhubaneswar ;
   Former Director of NISER and IOP, Bhubaneswar ; Formar J. C. Bose fellow
   Email : panda@niser.ac.in
2. **Prof. Samir D. Mathur**
   Senior Professor, Department of Physics, The Ohio State University,
   Email : mathur.16@osu.edu, samirdmathur@gmail.com
3. **Prof. Shiraz Minwalla**
   Professor, Department of Theoretical Physics,
   Tata Institute of Fundamental Research, Mumbai,
   Email : minwalla@theory.tifr.res.in , shiraz.minwalla@gmail.com
4. **Prof. Anupam Mazumdar**
   Professor, Faculty of Science and Engineering,
   University of Groningen, The Netherlands,
   Email : anupam.mazumdar@rug.nl , anu.mazumdar@gmail.com
5. **Prof. Soumitra SenGupta**
   Amal Kumar Raychaudhuri Chair Professor,
   School of Physical Sciences, Indian Association for the Cultivation of Science, Kolkata,
   Email : tpssg@iacs.res.in , soumitraiacs@gmail.com
6. **Prof. Supratik Pal**
   Professor and Head of the Department,
   Physics and Applied Mathematics Unit,
   Indian Statistical Institute, Kolkata,
   Email : supratik@isical.ac.in , supratik.physics@gmail.com
7. **Prof. Subhashish Banerjee**
   Professor, Department of Physics,
   Indian Institute of Technology, Jodhpur,
   Email : subhashish@iitj.ac.in