

# Curriculum Vitae

## Srijit Bhattacharjee

- **Affiliation:** Department of Applied Sciences  
IIIT Allahabad  
Devghat, Jhalwa, Uttar Pradesh  
INDIA-211015
- **Email:** srijuster@gmail.com, srijitb@iiita.ac.in
- **Present position:** Associate Professor
- Google Scholar profile: <https://scholar.google.com/citations?user=gsraAfIAAAJhl=en>
- Inspire-HEP id :<https://inspirehep.net/authors/1065349?ui-citation-summary=true>

## Academic Appointments

1. Assistant Professor Grade I; from Jan, 2019 - August 2025
2. Assistant Professor Grade II; from July 2016- Dec 2018
3. Postdoctoral fellow at the *High energy theory group of Institute of Physics, Bhubaneswar, India* between 12 November, 2015 to 15 July, 2016.
4. Worked as post doctoral fellow at the *Discipline of Physics, Indian Institute of Technology Gandhinagar* between August 4, 2014 to November 3, 2015 and from May 2013 to January 2014.
5. Worked as post doctoral fellow (from Feb 2014 to July 2014) at the *department of Physical Sciences, IISER Mohali, Punjab, India*.

## Education Summary

- PhD from Saha Institute of Nuclear Physics, Kolkata, India (2014):
- Post. M.Sc. Associateship diploma course, Saha Institute of Nuclear Physics (SINP), 2007.
- M. Sc. in Physics, 2006, Jadavpur University, Kolkata, India.
- B. Sc. with Physics Hons., 2004, Jadavpur University, Kolkata, India.

## Research Interests

- Classical & quantum aspects of Gravity
- Black Hole and its Thermodynamics
- Quantum Field Theory
- Nonlinear dynamics
- Quantum Information & Open quantum systems

## Awards and Scholarships/ Grants

- MATRICS grant from SERB, DST (GoI), project title: *A study of black hole horizons with (semi) analytic approaches*, 2022, 3 years, INR 2 lakh pa.
- Grant from SERB-DST GoI, under the Accelerated Vijnyan scheme (Vrittika) for the event titled- *Computational and Theoretical Aspects of Gravitational Physics at IIIT, Allahabad (CompGravIIITA)*; Cost: INR 50,000 (May-July 2021) (completed)
- Early Career Research Award for the project titled "Near Horizon Structure of Black Holes", sponsored by DST-SERB India. Total sanctioned cost: INR 19,77,400 (October 2019 -April 2022). (completed)
- Research grant approved by IIIT Allahabad on the project "Probing the Interior of AdS Black holes", Nov 2017. Approximate budget INR 800000. (completed)
- Grant for National Post Doctoral Fellowship (SERB-DST India) on the project: Internal structure of AdS Black Holes. (Forfeited)
- Joint CSIR-HRDG National Eligibility Test (LS) , December 2009
- DST International Travel grant to attend Summer School on Quantum Gravity and Quantum Cosmology, Greece, 2011.
- Junior and Senior Research Fellowship of Department of Atomic Energy, 2006-2013.
- National level tests qualified: GATE 2006, JEST-2006.

## Academic visits

1. April 21-23, 2025; Theoretical Physics division INFN Bologna, Italy
2. April 7-21, 2025, High Energy, Cosmology, Astro-Particle division, ICTP, Trieste, Italy
3. September 25-26, 2024; High Energy Physics Theory group, IIT Kanpur, India
4. March 24-30, 2024; CSGC, Department of Physics, IIT Madras, India
5. June 8-23, 2023; IUCAA, Pune, India
6. Jan 7-13, 2019, Chennai Mathematical Institute, Chennai India
7. Nov 2-10, 2018; Discipline of Physics, IIT Gandhinagar
8. June 06 - June 13, Max Planck Institute for Gravitational Physics (AEI), Potsdam, Germany.
9. June 13-21, 2018; Institute for Physics, University of Oldenburg, Germany.
10. May 27- June 06, 2018 Albert Einstein Centre for Fundamental Physics, University of Bern, Switzerland.
11. January 29-30, 2018, Center forTheoretical Physics, Jamia Millia Islamia, New Delhi, India.
12. May 21-25, 2017, *Department of Physics IIT Guwahati*.
13. February 6-16, 2017, *Institute of Physics, Bhubaneswar*, Odisha, India.
14. October 5-13, 2015, at the Theory Group of *Saha institute of Nuclear Physics, Kolkata*, India.
15. June 22-26, 2015, at *Physics and Applied Mathematics Unit, ISI Kolkata*, India.
16. June 3-21, 2014 at the *Department of Theoretical Physics, Indian Association for The Cultivation of Science, Kolkata*, India.

17. December, 2013 at the division of *Theoretical Physics of Institute of Mathematical Science, Chennai*, India.
18. October, 2012 at the *Astronomy and Astrophysics division of Tata Institute of Fundamental Research, Mumbai*, India.

## List of publications

1. *Homothetic Killing horizons in Vaidya spacetimes*, with Ritwika Ghoshal, Nilay Kundu (in preparation)
2. *Perturbative soft graviton theorems in de Sitter spacetime* Divyesh N. Solanki, Pratik Chattopadhyay, Srijit Bhattacharjee. *e-Print: 2502.03481* ; *JHEP* 12 (2025) 008
3. *Supertranslations at Spatial and Timelike Infinites in the First-Order Formalism*, D. N. Solanki and S. Bhattacharjee, *arXiv:2409.01783*, *Phys.Rev.D* 111 (2025) 2, 024033.
4. *Can the Near-Horizon Black Hole Memory be detected through Binary Inspirals?* Sajad A. Bhat, Srijit Bhattacharjee, Shasvath J. Kapadia, *Accepted in PRD*
5. “Soft Theorems and Memory Effects at Finite Temperatures,” D. N. Solanki and S. Bhattacharjee, *The European Physical Journal C* **83** (12), 1-13 [*arXiv:2308.02445 [hep-th]*].
6. *Slowly evolving horizons in Einstein gravity and beyond*, Ayon Tarafdar and Srijit Bhattacharjee; *Class. Quant. Grav.* **40** (2023) 20, 205017; *arXiv:2210.15246v1 [gr-qc]*
7. *Can we detect a supertranslated black hole ?* Shailesh Kumar, Subhodeep Sarkar, Srijit Bhattacharjee; *Phys.Rev. D* 105 (2022) 8, 084001, *arXiv:2110.03547[gr-qc]*
8. *Scalar perturbations of black holes in Jackiw-Teitelboim gravity*; Srijit Bhattacharjee, Subhodeep Sarkar, Arpan Bhattacharyya, *Phys.Rev.D* **103** (2021) 2, 024008; *arXiv: 2011.08179 [gr-qc]*
9. *Displacement memory effect near the horizon of black holes*; Srijit Bhattacharjee , Shailesh Kumar, Arpan Bhattacharyya; *arXiv:2010.16086 [gr-qc]* *JHEP* 03 (2021) 134, 2021
10. *Mass Inflation and Strong Cosmic Censorship in a non-extreme BTZ black hole*, Srijit Bhattacharjee, Shailesh Kumar, Subhodeep Sarkar, *arXiv:2005.09705*; *Phys.Rev. D* **102** (2020) 4, 044030.
11. *Memory effect and BMS symmetries for extreme black holes*, Srijit Bhattacharjee and Shailesh Kumar, *arXiv: 2003.09334*, *Phys.Rev. D* **102** (2020) 4, 044041.
12. *Memory Effect and BMS-like symmetries for Impulsive Gravitational Waves*, Srijit Bhattacharjee, Arpan Bhattacharyya, Shailesh Kumar, *arXiv:1905.12905*; **Phys. Rev. D** **100**, **084010** (2019)
13. *Soldering freedom and BMS-like transformations*, Srijit Bhattacharjee, and Arpan Bhattacharyya, **Phys. Rev. D** **98**, **104009**; *arXiv:1707.01112*.
14. *On Late Time Tails in an Extreme Reissner-Nordström Black Hole: Frequency Domain Analysis*, Srijit Bhattacharjee, Bidisha Chakrabarty, David D. K. Chow, Partha Paul, and Amitabh Virmani. *Class. Quant. Grav.* **35** (2018) no.20, 205002. *arXiv: 1805.10655*.
15. *No hair theorems for static and stationary reflecting star*, Srijit Bhattacharjee, Sudipta Sarkar; *e-Print: 1704.02873 [gr-qc]* ; *Phys. Rev.D* **95**, **084027** (2017).
16. *Constraining scalar-Gauss-Bonnet Inflation by Reheating, Unitarity and PLANCK* S. Bhattacharjee, D. Maity, R. Mukherjee; **Phys. Rev. D** **95**, **023514**; *arXiv:1606.00698 [gr-qc]* (2017).
17. *Internal structure of charged AdS black Holes*, S. Bhattacharjee, S. Sarkar and A. Virmani; **Phys.Rev. D93 (2016) no.12, 124029**, *arXiv:1604.03730 [hep-th]*.
18. *Entropy functionals and c-theorems from the second law*, S. Bhattacharjee, A. Bhattacharyya, S. Sarkar, A. Sinha; **Phys. Rev. D** **93** (2016) no.10, **104045**, *arXiv:1508.01658*.
19. *Holographic entropy increases in quadratic curvature gravity*, S. Bhattacharjee, S. Sarkar and A C. Wall; **Phys. Rev. D** **92** **064006** (2015); *arXiv:1504.04706*.

20. *Physical Process First Law and Caustic avoidance for Rindler Horizon*, S. Bhattacharjee and S. Sarkar, **Phys. Rev. D** **91** **024024**, arXiv:1412.1287 (2014) .
21. *Gravitational Coleman Weinberg Potential and it's Finite Temperature Counterpart*, **Nucl. Phys. B** **13096**, **481**, (2014). arXiv:1210.0497 [hep-th], [gr-qc]; *Srijit Bhattacharjee* and Parthasarathi Majumdar.
22. *Gauge-free Coleman-Weinberg Potential*; arXiv:1302.7272[hep-th]; *Srijit Bhattacharjee* and Parthasarathi Majumdar, **EPJ C** **73**: **2348**, (2013).
23. *Gauge invariant couplings of fields to torsions: a string inspired model*; *Srijit Bhattacharjee* and Ayan Chatterjee , **Phys. Rev. D** **83**:**106007**, (2011); arXiv:1101.0118 [hep-th].
24. *Gauge-free Electroweak theory: Radiative effects* *Srijit Bhattacharjee* and Parthasarathi Majumdar, **Phys. Rev. D** **83**:**085019**, (2011); arXiv:1006.1712 [hep-ph].
25. *Standard Model with gauge inert variables*, *Srijit Bhattacharjee* arXiv:1408.6519.
26. *Gauge-free Electrodynamics*, Parthasarathi Majumdar and *Srijit Bhattacharjee*, arXiv: 0903.4340.

### Papers in Non-linear Dynamics & Epidemiology

27. Will there be a third COVID-19 wave? A SVEIRD model based study of Indian situation. Dwarakesh Kannan, Gurusriram R, Rudra Banerjee, **Srijit Bhattacharjee**, Pritish Kumar Varadwaj medRxiv 2021.05.16.21257300; **Indian J Phys** **95**, 2513–2521 (2021). <https://doi.org/10.1007/s12648-021-02196-w>
28. *A Study of COVID-19 epidemic in India with SEIRD model*, Rudra Banerjee, **Srijit Bhattacharjee**, Pritish Kumar Varadwaj; **Quant. Biol.** 2021, Vol. 9 Issue (3) 317-328. DOI: 10.15302/J-QB-021-0260.
29. Analyses and Forecast for COVID-19 epidemic in India, Rudra Banerjee, Srijit Bhattacharjee, Pritish Kumar Varadwaj, MedarXiv, doi: <https://doi.org/10.1101/2020.06.26.20141077>. (*a preliminary version of the above paper.*)

### Conference papers

1. "Infrared Issues in Graviton Higgs Theory", arXiv:1301.7312 [gr-qc]; *Srijit Bhattacharjee* and Parthasarathi Majumdar. (**Proceedings of the 13th Marcel Grossmann Meeting, Stockholm, World Scientific, p 1962-1964 2015**).
2. "Vilkovisky-DeWitt Effective Potential Revisited in Gauge-Free Framework", *Srijit Bhattacharjee* arXiv:1210.1163. [hep-th] (**Proceedings of the 13th Marcel Grossmann Meeting, Stockholm, World Scientific, p 1981-1982 2015**).

# Teaching Experience

## Courses taught

General Relativity (Elective topic for PG students), General Relativity (course taught at HRI) ,Engineering Physics (B.Tech. 1st year), Quantum computing & information (7 semester b. Tech. elective), Probability and Statistics (SPAS230C) (B.Tech. 2nd year), Discrete Mathematical Structure (B. Tech. 2nd year) BioStatistics & BioMathematics (SBDA131C, SBST732C) (M. Tech. 1st semester/ Dual degree M. Tech. 7th semester), Quantum and Statistical Mechanics: Advanced Methods (course designed for PhD scholars), Numerical Methods (M.Tech. 2nd semester, Bioinformatics), Classical Mechanics (Elective for PG students) .

## Other experiences

1. Feb, 2011, Winter School on Gravity and Cosmology, Tutor, Assam University, Silchar, India.
2. Oct, 2008, 3rd Amol Kumar Raychoudhury School on General Relativity, Instructor, SINP, India.

## Invited and Contributed Talks

1. **Introduction to Quantum Measurements & Decoherence**, Lecture delivered at QIT-2025; on July 24 2025 at IIT Allahabad.
2. **Asymptotic Symmetries and Memories at Spacetime Boundaries** , DPS seminar at IISER Kolkata, June 03, 2025.
3. **Asymptotic Symmetries and Memories at Spacetime Boundaries**, Seminar delivered at Theoretical Physics division, INFN Bologna on April 22
4. **Asymptotic Symmetries and Memories at Spacetime Boundaries**, Seminar delivered at HECAP division of ICTP, Trieste on April 17
5. **A Journey Through the Second Quantum Revolution** invited talk at the conference on Quantum Mechanics turns 100: Past, Present, and Future; Sikkim University March 21, 2025
6. **An overview of Quantum Algorithms**, Talk delivered at Workshop on Quantum Science & Technologies, 18 March 2025 at IIT Allahabad
7. **Supertranslations in Asymptotically Flat Spacetimes**, seminar at HEP Theory group, IIT kanpur, 26 September 2024.
8. **A Detection Mechanism for Black Hole Memory Effect**, 10th ICGC Conference, IIT Guwahati 9 December, 2023
9. **Supertranslated black holes and their memories**, invited talk at 2nd Chennai symposium on Gravitation & Cosmology, 2 February, 2022.(Online)
10. **Near Horizon Asymptotic Symmetries of Black Holes**, invited talk at the 6th Shivalik HEPCATS meeting held at Central University of Himachal Pradesh, Dharamshala, India on September 2, 2022.
11. **Inner horizon instabilities of black holes**, Colloquium given on September 1, 2022 at the department of Physics, Central University of Himachal Pradesh, Dharamshala, India.
12. **Detecting the Asymptotic Symmetries of Black Holes**, invited talk at IIT Kharagpur gravity group discussion, November 22, 2021. (Online)
13. **Inner Horizon Instability of Black Holes**, invited seminar at the Centre for Quantum Spacetime, Sogang University, Korea, 19 Feb-2021 (online).
14. **Study of Covid-19 in India with SEIRD model**, talk given at the special session on Covid-19 in the 19th International Conference on Bioinformatics (InCoB 2020), Nov 25, 2020 (virtual mode).
15. **Soldering freedom and BMS like transformations**, seminar at Chennai Mathematical Institute, January 9, 2019.

16. **Soldering freedom and BMS like symmetries**, Parallel session talk in Classical Gravity, IAGRG-30, BITS Hyderabad, January 5, 2019.
17. **Inner horizon instability of black holes**, Bremen-Oldenburg Relativity seminar, University of Oldenburg, on 18 June, 2018.
18. **Inner horizon instability of black holes**, seminar delivered AEI, Potsdam, Germany, on 12 June, 2018.
19. **Mass inflation instability in Black Holes**, seminar delivered at AEC, University of Bern, Switzerland, on 29 May, 2018.
20. **Near horizon structure of black holes**, invited talk at the Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi, January 30, 2018.
21. **Near Horizon Physics of Black Holes**, Seminar at the department of Physics, IIT BHU, September 1, 2017.
22. **Mass Inflation instability in Black Holes**, seminar at the department of Physics, IIT Guwahati, May 24, 2017.
23. **Internal structure of AdS Black Holes**, contributed talk in the parallel session of Classical gravity at 29-IAGRG meeting, IIT Guwahati
24. **Entropy Functionals and Second Law**, invited talk at the XI meeting on Field Theoretic Aspects of Gravity 2016, February 24, held at S N Bose National Centre for Basic Science, Kolkata, India.
25. **Entropy Functionals and Second Law for Curvature Squared Gravity Theories**, contributed talk at Advances in Astroparticle Physics & Cosmology 2015, Saha Institute of Nuclear Physics, Kolkata, India, 16 October.
26. **Entropy Functionals and Second Law for Curvature Squared Gravity Theories**, seminar given at the Theory group, Saha Institute of Nuclear Physics, Kolkata, 8 October, 2015.
27. **Entropy Functionals and Second Law for Curvature Squared Gravity Theories**, invited talk at the Young Researchers' Conference, Institute of Physics, Bhubaneswar, 29 September, 2015.
28. **Physical process first law for Rindler horizon**, contributed talk at Young Physicistsâ Meet 2015, Physical Research Laboratory, Ahmedabad; March 12, 2015.
29. **Applicability of First Law for Rindler Horizon**, invited talk at the FTAG 2014, IISER Mohali, Punjab; 10th December, 2014.
30. **Applicability of First Law for Rindler Horizon**, invited talk at APC division, Saha Institute of Nuclear Physics, Kolkata, 2nd May 2014.
31. **Applicability of First Law for Rindler Horizon**, invited talk at the division of Theoretical Science, S N Bose National Centre for Basic Sciences, Kolkata, 30th April, 2014.
32. **Applicability of First Law for Rindler Horizon**, invited talk at PAMU, ISI, Kolkata, 28th April, 2014.
33. **Infrared Instability in Graviton Higgs Theory**, Oral Presentation in XIII Marcel Grossmann Meeting, Stockholm, Sweden, July 2012.
34. **Gauge invariant coupling of fields to torsion: A string inspired model**, Talk given at the 7th International Conference on Gravitation and Cosmology (ICGC), Goa, India, Dec 2012.
35. **Gauge invariant coupling of fields to torsion: A string inspired model**, Oral Presentation at the Sixth Aegean Summer School on Quantum Gravity and Quantum Cosmology, Island of Naxos, Greece, September 2011.
36. **Towards Gravitational Coleman Weinberg Mechanism**, Invited talk at the VIII meeting on Field Theoretic Aspects of Gravity, HNB Garhwal University, Srinagar, India, April 2010.

37. **Gauge Free Electroweak Theory: Radiative Effects**, Contributed talk at XIX DAE-BRNS High Energy Physics Symposium, Jaipur, India, Dec 2010.

## Posters

38. **Vilkovisky-DeWitt effective potential revisited in gauge-free approach**, Poster presented at XIII Marcel Grossmann Meeting, Stockholm, Sweden, July 2012.

39. **Gauge invariant coupling of fields to torsion: A string inspired model**, Poster presented at the COSGRAV12, Indian Statistical Institute, Kolkata, India. Feb 2012.

## Talks/Lectures delivered in Academic Outreach activities

1. *The story of Black Holes: From Einstein to Penrose*, Lecture given to the students and interns in the SERB sponsored program CoMPGravIIITA 2021 under the scheme Vritika. Date-28 May, 2021. Held at IIIT Allahabad in online mode.
2. *Exploring the Nature at Different Scales*, Talk given at the Summer workshop for school children of classes 9-12, orgaised by NASI Allahabad and IIIT Allahabad jointly on 8 June 2019.

## Conferences

1. Two-Dáy Hybrid Conference on "Quantum Mechanics Turns 100: The Past, Present and Future" 21-22 March 2025
2. IEEE 8th Conference on Information and Communication Technology 2024 (IEEE CICT-2024), 6-8 December 2024 at IIIT Allahabad India.
3. 10th International Conference on Gravitation & Cosmology, 6-9 December 2023 at IIT Guwahati, India.
4. Testing Aspects of General Relativity II, 11-13 April 2023 (online)
5. 6th Shivalik Meeting on High Energy Physics, Cosmology & Astrophysics, September 2, 2022 at CUHP, Dharamshala, India.
6. Testing Aspects of General Relativity, 11-14 March 2022 (online)
7. 2nd Chennai symposium on Gravitation & Cosmology, 2-5 February, 2022.(Online)
8. 31st meeting of the Indian Association for General Relativity and Gravitation (IAGRG-2020), IIT Gandhinagar, (Online) 19-20, December, 2020
9. 19th International Conference on Bioinformatics (InCoB 2020), Nov 25-29, 2020.
10. "The Dual Mysteries of Gauge Theories and Gravity, ", held at IIT Madras, Oct 19-24, 2020.
11. 30th Meeting of IAGRG, BITS Hyderabad, Jan 3-5, 2019.
12. 29th Meeting of Indian Association for General Relativity and Gravity (IAGRG), IIT Guwahati, May 15-17, 2017.
13. Field Theoretic Aspects of Gravity 2016, XI-th meeting, February 22-26, held at S N Bose National Centre for Basic Science, Kolkata, India.
14. Advances in Astroparticle Physics & Cosmology, held at Saha Institute of Nuclear Physics, Kolkata, India; 14-17 October 2015.
15. Young Researchers' Conference 2015, 28-30 September, held at Institute of Physics, Bhubaneswar, India.
16. Young Physicistsâ Meet 2015, Physical Research Laboratory, Ahmedabad; March 10-13, 2015.
17. Field Theoretic Aspects of Gravity, December 8-13, 2014 held at IISER Mohali, Punjab, India.
18. Field Theoretic Aspects of Gravity, September 5-8, 2013 held at IIT Gandhinagar, India.

19. XIII Marcel Grossmann Meetingâ , July 1-7, 2012 held at Stockholm, Sweden.
20. International Conference on Modern Perspectives of Cosmology and Gravitation, Feb 7-11 2012, Indian Statistical Institute, Kolkata, India.
21. 7th International Conference on Gravitation and Cosmology (ICGC 2011), December 14-19, Goa, India.
22. QFT-2011 at Indian Institute of Science Education and Research, February 23-27, Pune, India.
23. *XIX* DAE-BRNS HEP Symposium, December 13-18, Jaipur, India.
24. VIII meeting on Field Theoretic Aspects of Gravity, 19-23 April, HNB Garhwal Universiy, Srinagar, India.
25. 25th Meeting of the Indian Association for the General Relativity and Gravitation(IAGRG), January 28-31, SINP, Kolkata, India.
26. International Workshop on Advances in Astroparticle and Cosmology 2012 (AAPCOS 2012), March 7-12, Darjeeling, India. (Co-organiser)
27. International Workshop on Dark Matter in LHC Era: Direct and Indirect Searches, January 2011, SINP, Kolkata, India. (Co-organiser)

## **Conference/Workshops/ Internships/Short term courses organised**

- 5-Day Symposium and Training Workshop on Quantum Information Technologies (QIT) July 24-28, 2025 at IIIT Allahabad
- Symposium and Workshop on Quantum Science & Technology March 17-18, 2025; Celebrating 100 years of Quantum Physics
- Emerging Trends of Quantum Science and Technology, 14 December 2024 at IIIT Allahabad.
- Workshop on Numerical & Analytical Relativity, March 20-22, 2024, (Online). Role: Convener
- Testing Aspects of General Relativity, Conference organised jointly with IIT Gandhinagar and University of Lethbridge, Canada. 11-14 March 2022 (online)
- COMPGRAVIIITA internship program for postgraduate students May-July 2021. Funded by SERB under the scheme Vritika(Accelerate Vijyan). Role: Event organizer.
- Computational Methods in Physics with Python (CoMP-Py), short term course conducted May 8, 2021-July 10, 2021. Self financed course. Role: Coordinator and Instructor.
- Workshop on Applications of Data Science in Astrophysics and Gravitational Wave Research, Nov 1-3, 2019 at IIIT Allahabad. Role- Co-convener.
- 34th Annual convention of Indian Association of Physics Teachers (IAPT 2019) 13-15 Oct 2019. Role- Coordinator
- Workshop on (ExpEYES), Interfacing Physics Experiments to Convert your PC into Physics Laboratory, 21-22 April, 2018, Role-coordinator

## **Schools/Workshops/FDP/Symposium Attended**

1. School on Black Holes and Gravitational Waves, January 17-22, 2022 at IIT Madras (Online)
2. Testing General Relativity using Gravitational Waves, IIT Gandhinagar, (Online) 13-14, August, 2020
3. Recent Developments in S-Matrix Theory, ICTS-TIFR, July 20-31 2020.
4. Workshop on “Black Holes: From Classical to Quantum Gravity” Dec 15-19, 2017 at IIT Gandhinagar, India.
5. Faculty Development Programme on e-content Development NITTTR, Chennai (online), 15-19 June

6. Workshop for Social Media Champions, Govt. of India, New Delhi, Dec 27, 2019
7. GIAN course on *The Black Hole Information Paradox by Prof. Samir. D. Mathur* held at IIT Gandhinagar between June 27 to July 8th , 2016. Participated and *conducted a tutorial session on laws of black hole mechanics*.
8. String-meeting with *Prof. Ashoke Sen*, NISER, Bhubaneswar December 17-19, 2015.
9. Asymptotia: Workshop on Asymptotic Symmetries in Classical and Quantum Gravity. Chennai Mathematical Institute, 6 - 8 December 2013.
10. September, 2011, Sixth Aegean Summer School on Quantum Gravity and Quantum Cosmology, Island of Naxos, Greece.
11. September, 2009, School on Loop Quantum Gravity, Institute Of Mathematical Sciences, Chennai, India.
12. November, 2007, SERC Preparatory School on Theoretical High Energy Physics, Banaras Hindu University, Varanasi, India.
13. October, 2008, 4th Amol Kumar Raychoudhury School on General Relativity, SINP, India. (acted as co organizer)
14. October, 2007, 3rd Amol Kumar Raychoudhury School on General Relativity, SINP, India.

## Thesis/Project Supervision

### Doctoral

- Shailesh Kumar(completed); Thesis title: Gravitational Memory Effect for Near-Horizon Asymptotic Symmetries  
Presently NPDF, at IIT Gandhinagar
- Shubhodeep Sarkar(completed); Thesis title: : A Descent into the Maelström: Probing the near-horizon structure of black holes using perturbative techniques  
Presently Postdoc at IIT Madras
- Divyesh Solanki (ongoing)
- Shalini Harkar; joint supervision with Prof. Pritish varadwaj (WP, ongoing).

### Masters

- Vipin Tirkey, *Population models with varying carrying capacity*; Arvind Saroj, *Stochastic resonance*; Raviranjan Kumar, *Noise-induced transition*; Sujeet Kumar, *Modelling tumor growth*; Shruti Gupta, *Modeling Epilepsy and Alzheimer*; Ananya Mishra *Heart disease*, Ayush Shukla *Optimization*, Vansharaj Singh *Parametric Resonance*, Vikash Kumar *Population dynamics*, Anand Khandelwal *Activation function in machine learning*; Jay Vyas *ML in Burger's equation* and Mayank Maravaniya *ML application to find matches in social media*, Kayuum Yusuf Ali *Infectious disease Modeling*, Kavin S Prasath, Himanshu Shekhar Pandey, Jaya Singh.

## Summer/Winter Project/Internship Supervised

Sanchari Biswas & Yuvasri G of Christ University (Bengaluru) did their Master's Thesis on *A study on Black Hole Shadows* 2021-2022.

Ashley Chraya (IISER Mohali) did Vritika internship COMPGRAVIIITA in May-July 2021 on *A study of black hole quasi normal modes*.

Ayon Tarafdar(University of Calcutta) did Vritika internship COMPGRAVIIITA in May- July 2021 on *Initial value formulation of General Relativity*.

Amit Gupta (DTU, New Delhi) on *Mass inflation instability in black holes*

Vishal Mugetia (IIIT Allahabad)on *Heart as a self-oscillatory system*.

Vishal Mugetia and Sanjeev Rajpoot (IIIT Allahabad) *Noise reduction*

Priyam Srivastava (IISER Bhopal) on *Entanglement Entropy*

Sanjoy Saha (IIT Gandhinagar) on *Lagrangian formulation of General Relativity*

Payal Roy (Calcutta University) on *Raychaudhuri equation*

Tiyasa Kar (NIT Surat) on *Path integral in quantum and stochastic systems*

Sourin Naskar (NIT Rourkella) on *Introduction to Einstein's equation*

Sanchayan Banerjee (Ramkrishna Mission Residencial College , Narendrapur) B. Sc. thesis on *The motion of a space-ship in A Rotating space-time.*

Saptarshi Ghosh (Ramkrishna Mission Residencial College , Narendrapur) winter project on *Linearized gravity and gravitational waves.*

Aryan Bhatia (IISER TVM)

Gayatri Panda( NISER, Bhubaneswar),

Saurabh Rai (IIT Guwahati),

Anuthi Tiwari (IISER TVM)

Sai Srinivas Sandhyala (Parul University, Vadodara)

## Review job in International Journals

Classical & Quantum Gravity, General Relativity & Gravitation, Nuclear Physics B, Proceedings of Royal Society A, Journal of High Energy Physics, Pramana, International Journal for Theoretical Physics

## Membership in National/International Association

- Member of American Physical Society (APS) (2025-2026)
- Member of the International society- Is Quantum Gravity (ISQG)
- Life member of Indian Association for General Relativity & Gravitation (IAGRG)
- Visiting Associate of Inter-University Centre for Astronomy and Astrophysics, Pune.
- Member of IEEE & IEEE society for Quantum Information Theory
- Life member of Indian Association of Physics Teachers (IAPT)