INDRANI BANERJEE

Assistant Professor
Theoretical Physics Group
Department of Physics & Astronomy,
National Institute of Technology, Rourkela, India

BIOGRAPHICAL DETAILS

Gender: Female

Nationality: Indian

Date of Birth: November 4, 1984

CONTACT INFORMATION

Department of Physics & Astronomy,
National Institute of Technology, Rourkela
Sundargarh, Odisha-769008, India
email: banerjeein@nitrkl.ac.in
indrani.physics1@gmail.com

WORK EXPERIENCE

Research Associate June, 2017-August, 2020
Indian Association for the Cultivation of Science, Kolkata, India

Post-doctoral Research Associate June, 2015 – June, 2017
S. N. Bose National Centre for Basic Sciences, Kolkata, India

Senior Research Associate September, 2014-June, 2015
Indian Institute of Science, Bangalore, India

EDUCATION

PhD | ***Astrophysics*** 2014
Indian Institute of Science, Bangalore, India

MS | ***Physics (CGPA: 6.7/8)*** 2010
Indian Institute of Science, Bangalore, India

BSc. | ***Physics (Hons) (First Class: 64.6%)*** 2007
Presidency College, University of Calcutta, India

Research Ineterest

- Alternative theories of gravity and their implications from astrophysical and cosmological observations.
- Extra-dimensional models and braneworlds.
- Theoretical and observational aspects of accretion onto blackholes, e.g., study of the black hole continuum spectrum, quasiperiodic oscillations, black hole shadow.
  Investigating observational properties of black holes in X-rays

Computational Skills

Operating Systems
- Linux
- Windows

Programming Languages
- C
- FORTRAN 77

Software Packages
- Mathematica
- Shell Script
- Gnuplot
- Latex
- HEASOFT
- XSPEC
- FTOOLS
- Super Mongo
- Origin

Achievements and Honors

Received Start-Up Research Grant fom SERB, India 2022

Received Visiting Associateship from IUCAA, Pune 2021

Qualified WBCSC (West Bengal College Service Commission) interview 2019
Rank 77 (out of 1500 candidates approximately)

Received Travel Grant from IUPAP (International Union of Pure and Applied Physics) 2018
(To attend the conference COSPAR 2018 held at Pasadena, USA, July 14-22, 2018)

Selected as a Grant Recipient of 42nd COSPAR Scientific Assembly 2018
(To attend the conference COSPAR 2018 held at Pasadena, USA, July 14-22, 2018)

Received CSIR Travel Grant 2013
(To attend the 27^{th} Texas Symposium on Relativistic Astrophysics, held at Dallas, USA, December 8-13, 2013)

Qualified IISc Entrance Exam for Integrated PhD Programme 2007
All India Rank 9

Qualified Joint Entrance Screening Test (JEST) 2007
All India Rank 98

Qualified Joint Admission Test for M.Sc. (JAM) 2007
All India Rank 63 (out of 2569 candidates)

33. Deciphering signatures of Kerr-Sen black holes in presence of plasma from the Event Horizon Telescope data,
Siddharth K. Sahoo and Indrani Banerjee
Journal of Cosmology and Astroparticle Physics, 10, 100 (2025); arXiv:2504.09443

32. Signatures of Einstein-Maxwell dilaton-axion gravity from the observed quasi-periodic oscillations in black holes
Anirban Dasgupta, Nishant Tiwari and Indrani Banerjee
Journal of Cosmology and Astroparticle Physics, 10, 054 (2025); arXiv:2503.02708

31. Imprints of Einstein-Maxwell dilaton-axion gravity in the observed shadows of Sgr A* and M87* ,
Siddharth K. Sahoo, Neeraj Yadav and Indrani Banerjee
Physical Review D, 109, 4, 044008 (2024); arXiv:2305.14870

30. Signatures of regular black holes from the quasar continuum spectrum,
Indrani Banerjee
The European Physical Journal C 83, 2, 171 (2023); arXiv:2206.06899

29. Rotating hairy black holes and thermodynamics from gravitational decoupling,
Subhash Mahapatra and Indrani Banerjee
Physics of the Dark Universe, 39, 101172 (2023); arXiv: 2207.09003;

28. Hunting extra dimensions in the shadow of Sgr A*,
Indrani Banerjee, Sumanta Chakraborty and Soumitra SenGupta
Physical Review D, 106, 8, 084051 (2022); arXiv: 2207.09003

27. Signatures of regular black holes from the shadow of Sgr A* and M87*,
Indrani Banerjee, Subhadip Sau and Soumitra SenGupta
Journal of Cosmology and Astroparticle Physics, 09, 066 (2022); arXiv: 2206.12125

26. Aspects of non-singular bounce in modified gravity theories,
Indrani Banerjee, Tanmoy Paul and Soumitra SenGupta
General Relativity and Gravitation, 54, 10, 119 (2022); arXiv: 2205.05283

25. Testing black holes in non-linear electrodynamics from the observed quasi-periodic oscillations,
Indrani Banerjee,
Journal of Cosmology and Astroparticle Physics, 08, 034 (2022); arXiv: 2203.10890

24. Deciphering signatures of Bardeen black holes from the observed quasi-periodic oscillations,
Indrani Banerjee,
Journal of Cosmology and Astroparticle Physics, 05, 020 (2022); arXiv: 2201.00679

23. Quasar continuum spectrum disfavors black holes with a magnetic monopole charge,
Indrani Banerjee, Vijay Shersingh Chawan, Bhaswati Mandal, Siddharth Kumar Sahoo and Soumitra SenGupta,
Physical Review D, 105, 6, 064073 (2022); arXiv: 2112.05385

22. Unifying an asymmetric bounce to the dark energy in Chern-Simons F(R) gravity,
Sergei D. Odintsov, Tanmoy Paul, Indrani Banerjee, Ratbay Myrzakulov and Soumitra SenGupta,
Phys. Dark Univ. 33, 100864 (2021); arXiv: 2109.00345

21. Analytic topological hairy dyonic black holes and thermodynamics,
Supragyan Priyadarshinee, Subhash Mahapatra and Indrani Banerjee
Physical Review D 104, 8, 084023 (2021); arXiv: 2108.02514

20. Critical analysis of modulus stabilization in a higher dimensional F(R) gravity,
Indrani Banerjee, Tanmoy Paul and Soumitra SenGupta,
Physical Review D 104, 10, 104018 (2021); arXiv: 2108.00370

19. Looking for extra dimensions in the observed quasi-periodic oscillations of black holes,
Indrani Banerjee, Sumanta Chakraborty and Soumitra SenGupta,
Journal of Cosmology and Astroparticle Physics 09, 037 (2021); arXiv: 2105.06636

18. Signatures of Einstein-Maxwell dilaton-axion gravity from the observed jet power and the radiative efficiency,
Indrani Banerjee, Bhaswati Mandal and Soumitra SenGupta,
Physical Review D 103, 4, 044046 (2021); arXiv: 2007.03947

17. Bouncing cosmology in a curved braneworld,
Indrani Banerjee, Tanmoy Paul and Soumitra SenGupta,
Journal of Cosmology and Astroparticle Physics 02, 041 (2021); arXiv: 2011.11886

16. Implications of Einstein-Maxwell dilaton-axion gravity from the black hole continuum spectrum,
Indrani Banerjee, Bhaswati Mandal and Soumitra SenGupta,
Monthly Notices of the Royal Astronomical Society 500, 1, 481 (2020); arXiv: 2007.13980

15. Dynamical modelling of disc vertical structure in superthin galaxy 'UGC 7321' in braneworld gravity: An MCMC study, Aditya Komanduri, Indrani Banerjee, Arunima Banerjee and Soumitra SenGupta,
Monthly Notices of the Royal Astronomical Society 499, 4, 5690 (2020); arXiv: 2004.05627

14. Imprints of the Janis-Newman-Winicour spacetime on observations related to shadow and accretion,
Subhadip Sau, Indrani Banerjee, and Soumitra SenGupta,
Physical Review D 102, 6, 064027 (2020); arXiv:2004.02840

13. Implications of axionic hair on the shadow of M87*,
Indrani Banerjee, Subhadip Sau and Soumitra SenGupta
Physical Review D 101, 10, 104057 (2020); arXiv:1911.05385

12. Silhouette of M87*: A new window to peek into the world of hidden dimensions,
Indrani Banerjee, Sumanta Chakraborty and Soumitra SenGupta,
Physical Review D (Rapid Communication) 101, 4, 041301 (2020); arXiv:1909.09385

11. Does black hole continuum spectrum signal f(R) gravity in higher dimensions?,
Indrani Banerjee, Bhaswati Mandal and Soumitra SenGupta,
Physical Review D 101, 2, 024013 (2020); arXiv:1905.12820

10. Decoding signatures of extra dimensions and estimating spin of quasars from the continuum spectrum,
Indrani Banerjee, Sumanta Chakraborty and Soumitra SenGupta,
Physical Review D 100, 4, 044045 (2019); arXiv:1905.08043

9. Does Cyg X-1 have a small Standard Accretion Disc?,
Arindam Ghosh, Indrani Banerjee, and Sandip K. Chakrabarti,
Monthly Notices of the Royal Astronomical Society 484, 4, 5802 (2019); arXiv:1810.08249

8. Radion induced inflation on nonflat brane and modulus stabilization,
Indrani Banerjee, Sumanta Chakraborty and Soumitra SenGupta,
Physical Review D 99, 2, 023515 (2019); arXiv:1806.11327

7. In quest of axionic hairs in quasars,
Indrani Banerjee, Bhaswati Mandal and Soumitra SenGupta,
Journal of Cosmology and Astroparticle Physics, 03, 039 (2018); arXiv:1712.09554

6. Excavating black hole continuum spectrum: Possible signatures of scalar hairs and of higher dimensions,
Indrani Banerjee, Sumanta Chakraborty and Soumitra SenGupta,
Physical Review D 96, 8, 084035 (2017); arXiv:1707.04494

5. Modulus stabilization in a non-flat warped braneworld scenario,
Indrani Banerjee and Soumitra SenGupta,
The European Physical Journal C 77, 5, 277 (2017); arXiv:1705.05015

4. The 2004 Outburst of BHC H1743-322: Analysis of spectral and timing properties using the TCAF Solution,
Ayan Bhattacharjee, Indrani Banerjee, Anuvab Banerjee, Dipak Debnath and Sandip K. Chakrabarti,
Monthly Notices of the Royal Astronomical Society 466, 2, 1372 (2017); arXiv:1901.00810

3. Nucleosynthesis in the outflows associated with accretion disks of Type II collapsars,
Indrani Banerjee and Banibrata Mukhopadhyay,
The Astrophysical Journal 778, 1, 8 (2013); arXiv:1309.0954

2. Establishing a Relation between the Mass and Spin of Stellar Mass-Black Holes,
Indrani Banerjee and Banibrata Mukhopadhyay,
Physical Review Letters 111, 6, 061101 (2013); arXiv:1307.4075

1. Nucleosynthesis in the accretion disks of Type II collapsars,
Indrani Banerjee and Banibrata Mukhopadhyay,
Research in Astronomy & Astrophysics 13, 9, 1063 (2013); arXiv:1305.1755

A complete list of my publications can be found in:
http://orcid.org/0000-0002-5766-9368
https://scholar.google.co.in/citations?user=iA_I4D4AAAAJ&hl&hl=en

PUBLICATIONS IN PEER-REVIEWED CONFERENCE PROCEEDINGS

1. Nucleosynthesis inside accretion disks and outflows formed during core collapse of massive stars,
Indrani Banerjee
The Astronomical Society of India Conference Series, 8, 131 (2013); arXiv: 1310.5911

2. Nucleosynthesis in the gamma-ray burst accretion disks and associated outflows,
Indrani Banerjee and Banibrata Mukhopadhyay,
Proceedings, 13^{th} Marcel Grossmann Meeting on Recent Developments in Theoretical and Experimental General Relativity, Astrophysics, and Relativistic Field Theories (MG13): Stockholm, Sweden, July 1-7, 2012 (2015); arXiv:1302.3067

Other Publications

Online articles for a reader with non-science background:

1. **https://www.sparrho.com/d/new-dark-matter-candidate-offers-exciting-theory-0/**
2. **https://digest.sparrho.com/community/100-years-ago-einsteins-theory-was-proved-right**

Reviewer of Journals

Physics of the Dark Universe

Classical and Quantum Gravity

General Relativity and Gravitation

International Journal of Modern Physics D

Monthly Notices of the Royal Astronomical Society

Europhysics Letters

Membership

Indian Association for General Relativity and Gravitation

Astronomical Society of India

Orissa Physical Society

Teaching Experience

At NIT Rourkela As Course Instructor

- PH1001: Physics-I (For UG First Year Students)
- PH1070: Physics Laboratory (For UG First Year Students)
- PH1003: Waves & Optics (For UG First Year Students)
- PH4007: Quantum Mechanics and Applications (Minor degree course taken up by students of other departments with CGPA above 8)
- PH6123: An Introduction to General Theory of Relativity (For MSc. 2^{nd} Year and Int. MSc. 5^{th} Year Students)
- PH3005: Elements of Quantum Mechanics (For Integrated MSc. 3^{rd} Year Students)

At IACS, Kolkata As Teaching Assistant

- Introductory Classical and Quantum Mechanics
- Quantum Mechanics
- Electricity, magnetism and optics
- General Relativity & Cosmology

At IISc, Bangalore As Teaching Assistant

- Quantum Mechanics

STUDENT SUPERVISION

PhD Students

- Mr.Anirban DasGupta (ongoing)
- Mr.Siddharth Kumar Sahoo (ongoing)
- Dr. Subhadip Sau (completed; supervised during my post-doc period)
- Dr. Bhaswati Mandal (completed; supervised during my post-doc period)

MSc. Project Students

- Mr. Himanshu Sharma (completed)(2020-21)
- Ms. Megha Das (completed) (2021-22)
- Mr. Gaurav Rajendra Bonde (completed) (2021-22)
- Mr. Vijay Shersingh Chawan (completed) (2021-22)
- Mr. Neeraj Yadav (completed) (2022-23)
- Mr. Sayan Panda (completed) (2022-23)
- Mr. Nishant Tiwari (completed) (2022-23)
- Ms. Triparna Goswami (completed) (2023-24)
- Mr. Pankaj Sahoo (completed) (2023-24)
- Mr. Bairy Rishkrith (completed) (2023-24)
- Mr. Sohan Subrat (ongoing) (2024-25)
- Mr. Shyammilan Meena (ongoing) (2025-26)
- Mr. Satish Kumar Sahoo (ongoing) (2025-26)
- Mr. Rana Ghoshal (ongoing) (2025-26)
- Mr. Tadaka Gayathri (ongoing) (2024-25)

Summer Students

- Mr. Surajit Das
- Ms. Sayoni Chakraborty
- Mr. Neeraj Yadav

Short Term Industrial or Research Experience (SIRE) project

- Ms. Salmoli Ghosh (2020-21)
- Mr. Ayan Daripa (2022-23)

ORAL PRESENTATIONS

Title: **Gravitational Waves: The Music of the Cosmos (invited)** **:**

On National Space Day 2025, NIT, Rourkela

Organisers: **AstroNITR, Astronomy and Astrophysics Club, NIT, Rourkela**

Place & Date: **NIT, Rourkela, August 23, 2025**

Title: **Prospects of constraining the nature of strong gravity from the Event Horizon Telescope data (invited)**

Conference: **BRICS-AGAC 2024, Symposium on Gravity, Astrophysics and Cosmology**

Organisers: **The BRICS Association on Gravity, Astrophysics and Cosmology, CCSP, SGT University**

Place & Date: **CCSP, SGT University, Gurugram, Haryana, India, December 17-19, 2024**

Title: Signatures of extra dimensions from the shadows of M87* and Sgr A* (invited)

Conference: Beyond Standard Models in Particle Physics and Gravity

Organisers: Indian Association for the Cultivation of Science (IACS), Kolkata, India

Place & Date: Indian Association for the Cultivation of Science (IACS), Kolkata, India, December 22-23, 2022

Title: Bouncing cosmology in a curved braneworld (invited)

Conference: 2nd International Forum on Physics and Astronomy

Place & Date: Valencia, Spain (organised in hybrid mode); November 14-16, 2022

Title: Bouncing cosmology in a curved braneworld

Conference: Beyond Standard Model: From Theory to Experiment (BSM- 2021)

Organisers: Center for Fundamental Physics (CFP), at Zewail City of Science and Technology, Egypt & Faculty of Engineering and Natural Sciences, Sabancı University, Turkey

Place & Date: Organised in online mode; March 29-April 2, 2021

Title: How to Determine the Mass of a Black Hole using the TCAF solution? A case study with Cygnus X-1 and other sources

Conference: COSPAR 2021 (43rd COSPAR Scientific Assembly)

Place & Date: Sydney, Australia (organised in hybrid mode); January 28-February 4, 2021

Title: Silhouette of M87*: A new window to peek into the world of hidden dimensions

Conference: 31st meeting of the Indian Association for General Relativity and Gravitation, IAGRG (online)

Organisers: Indian Institute of Technology (IIT), Gandhinagar

Place & Date: Organised in online mode; December 19-20, 2020

Title: Silhouette of M87*: A new window to peek into the world of hidden dimensions

Workshop: Mathematical and Computational Approaches for Solving the Source-Free Einstein Field Equations

Organisers: The Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, USA

Place & Date: Organised in online mode; October 5-9, 2020

Title: Radion induced inflation on non-flat brane and modulus stabilization

Conference: Emerging Issues in Cosmology and Particle Physics (EICP2)

Organisers: Visva-Bharati University, India

Place & Date: Visva-Bharati University, India; January 12-14, 2020

Title: Black Hole Continuum Spectrum: Unlocking nature of background spacetime and properties of accretion flow (Invited)

Conference: Gravity at Different Length Scales

Organisers: Indian Association for the Cultivation of Science, Kolkata, India

Place & Date: Indian Association for the Cultivation of Science (IACS), Kolkata, India, February 25-27, 2019

Title: Constraining the mass of Cygnus X-1 using the Two Component Advective Flow Solution

Conference: COSPAR 2018 (42nd COSPAR Scientific Assembly)

Place & Date: Pasadena, California, USA, July 14-22, 2018

Title: Excavating black hole continuum spectrum: Possible signatures of scalar hairs and of higher dimensions

Conference: COSPAR 2018 (42nd COSPAR Scientific Assembly

Place & Date: Pasadena, California, USA, July 14-22, 2018

Title: Extracting the Accretion Flow Parameters and Estimating the Mass of Cygnus X-1 using TCAF Solution

Conference: Recent Trends in the Study of Compact Objects: Theory and Observation (RETCO-III)

Organisers: Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram, India

Place & Date: Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram, India, June 5-8, 2017

Title: Exploring accretion flow dynamics around black holes and estimating their masses

Conference: Topical Conference on Gravity, Cosmology and Astrophysics-Eastern Region (Part 7)

Organisers: Indian Association for the Cultivation of Science (IACS), Kolkata, India

Place & Date: Indian Association for the Cultivation of Science (IACS), Kolkata, India, March 25, 2017

Title: Dynamics of accretion flow around Cygnus X-1 using TCAF fits of spectral and timing data

Conference: Wide Band Spectral and Timing Studies of Cosmic X-ray Sources

Organisers: Tata Institute of Fundamental Research (TIFR), Mumbai, India

Place & Date: Tata Institute of Fundamental Research (TIFR), Mumbai, India, January 10-13, 2017

Title: Proposing a semi-empirical formula to predict the spins of black holes
Conference: Neighborhood Astronomy Meeting
Organisers: Indian Institute of Astrophysics (IIA), Bangalore, India
Place & Date: Indian Institute of Astrophysics (IIA), Bangalore, India, September 8-9, 2014

Title: Nucleosynthesis in the gamma-ray burst accretion disks and associated outflows
Conference: 27^{th} Texas Symposium on Relativistic Astrophysics
Organisers: Department of Physics at the University of Texas at Dallas, USA
Place & Date: Dallas, USA, December 8-13, 2013

Title: Core-collapse supernovae and correlation between mass and spin of stellar mass black holes
Conference: Accretion Onto Black Holes
Organisers: International Centre, Goa, India
Place & Date: International Centre, Goa, India, September 5-7, 2013

Title: Nucleosynthesis in the accretion disks and outflows associated with Type II collapsars
Conference: Recent Trends in the Study of Compact Objects: Theory and Observation (RETCO-2013)
Organisers: Indian Institute of Technology (IIT), Guwahati, India
Place & Date: Indian Institute of Technology (IIT), Guwahati, India, March 11-13, 2013

Title: Nucleosynthesis in the gamma-ray burst accretion disks and associated outflows
Conference: Thirteenth Marcel Grossmann Meeting
Place & Date: Stockholm University, Sweden, July 1-7, 2012

Title: Nucleosynthesis in the gamma-ray burst accretion disks
Conference: X-ray View of Cosmos
Organisers: Physical Research Laboratory (PRL), Ahmedabad, India
Place & Date: Physical Research Laboratory (PRL), Ahmedabad, India, April 23-25, 2012

Poster Presentations

Title: In quest of axionic hairs in quasars

Conference: COSPAR 2018 (42^{nd} COSPAR Scientific Assembly)

Place & Date: Pasadena, California, USA, July 14-22, 2018

Title: Evolution of Flow Parameters of the Persistent X-Ray Source Cygnus X-1 using the TCAF Solution

Conference: COSPAR 2018 (42^{nd} COSPAR Scientific Assembly)

Place & Date: Pasadena, California, USA, July 14-22, 2018

Title: Evolution of Flow Parameters of the Persistent X-Ray Source Cygnus X-1 using the TCAF Solution

Conference: XXXV Meeting of Astronomical Society of India

Place & Date: Birla Institute of Scientific Research (BISR), Jaipur, March 6-10, 2017

Conferences/Workshops attended

Conference: The 24th International Conference on Particle Physics and Cosmology, COSMO'21

Organisers: University of Illinois, Urbana-Champaign

Place & Date: Organised in online mode August 2-6, 2021

School: North American Einstein Toolkit School 2021

Organisers: University of Illinois, Urbana-Champaign

Place & Date: Organised in online mode, July 26-30, 2021

Workshop: Mathematical and Computational Approaches for Solving the Source-Free Einstein Field Equations

Organisers: The Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, USA

Place & Date: Organised in online mode, October 5-October 9, 2020

Workshop: Advances and Challenges in Computational Relativity

Organisers: The Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, USA

Place & Date: Organised in online mode, September 14-September 18, 2020

Conference: Physics of the Early Universe (PEU)-An Online Precursor

Organisers: International Center for Theoretical Sciences (ICTS), Bangalore, India

Place & Date: Organised in online mode, August 31-September 3, 2020

Conference: Observational Aspects of Black Holes

Organisers: Indian Association for the Cultivation of Science (IACS), Kolkata, India

Place & Date: Indian Association for the Cultivation of Science (IACS), Kolkata, India, January 9, 2020

Workshop: Black holes: From Classical to Quantum Gravity

Organisers: Indian Institute of Technology (IIT), Gandhinagar

Place & Date: Indian Institute of Technology (IIT), Gandhinagar, India, December 15 -19, 2017

Conference: Neighborhood Astronomy Meeting

Organisers: Raman Research Institute (RRI), Bangalore, India

Place & Date: Raman Research Institute (RRI), Bangalore, India, March 27, 2015

SEMINARS

Title: Gravitation: The simplest yet mysterious

Place & Date: NIT, Rourkela, December 9, 2024

Title: Testing black holes in non-linear electrodynamics from the observed quasi-periodic oscillations

Place & Date: ICARD and Centre for Theoretical Physics, Jamia Millia Islamia, February 29, 2024

Title: Signatures of extra dimensions from the shadows of M87* and Sgr A* (invited)

Place & Date: Department of Physics & Astronomy, NIT Rourkela, August 24, 2022

Title: Signatures of extra dimensions from the shadows of M87* and Sgr A* (invited)

Place & Date: Department of Physics, IIT Kharagpur (in online mode), August 17, 2022

Title: Gravitational Waves: The Music of the Cosmos (invited)

Place & Date: Dhenkanal Science Centre, National Council of Science Museums, Ministry of Culture, Govt. Of India (in online mode), August 29, 2021

Title: Gravitational Waves: The Music of the Cosmos (invited)

Place & Date: Department of Physics, College of Basic Science & Humanities, Odisha University of Agriculture and Technology, Bhubaneswar (in online mode), July 30, 2021

Title: Bouncing cosmology in a curved braneworld (invited)

Place & Date: Indian Association for the Cultivation of Science (IACS), Kolkata (in online mode), July 22, 2021

Title: Silhouette of M87*: A new window to peek into the world of hidden dimensions

Place & Date: Indian Institute of Science (IISc), Bangalore (in online mode), December 3, 2020

Title: Silhouette of M87*: A new window to peek into the world of hidden dimensions

Place & Date: Indian Institute of Technology (IIT) Tirupati, November 21, 2019

Title: Signatures of extra-dimensions in astrophysical observations

Place & Date: Ramkrishna Mission Vivekananda Education & Research Institute (RKMVERI), Kolkata, India, April 29, 2019

Title: Unravelling signatures of scalar hairs and higher dimensions from black hole continuum spectrum

Place & Date: Indian Institute of Science Education and Research (IISER), Kolkata, India, September 12, 2018

Title: The Clandestine Universe: A journey to the enigmatic world of hidden dimensions (Invited)

Place & Date: Presidency University, Kolkata, India, August 30, 2017

Title: Accretion around black holes: Key to unlock a world of eternal mysteries (Invited)

Place & Date: Kalyani Government Engineering College, Kalyani, India, March 3, 2017

Title: Exploring formation stage of black holes: nucleosynthesis & mass-spin correlation

Place & Date: Tata Institute of Fundamental Research (TIFR), Mumbai, India, May 15, 2015

Title: Exploring formation stage of black holes: nucleosynthesis & mass-spin correlation

Place & Date: **Presidency University, Kolkata, India, April 29, 2015**

Title: **Proposing a semi-empirical formula to predict the spins of black holes**

Place & Date: **S. N. Bose National Centre for Basic Sciences (SNBNCBS), Kolkata, India on April 28, 2015**

Title: **Exploring formation stage of black holes: nucleosynthesis & mass-spin correlation**

Place & Date: **Indian Association for the Cultivation of Science (IACS), Kolkata, India on April 27, 2015**

Title: **Exploring formation stage of black holes: nucleosynthesis & mass-spin correlation**

Place & Date: **Saha Institute of Nuclear Physics (SINP), Kolkata, India on April 16, 2015**

Title: **Correlation between mass and spin of black holes and nucleosynthesis in the flows around black holes**

Place & Date: **Harvard-Smithsonian Center for Astrophysics, December 16, 2013**

Title: **Correlation between mass and spin of black holes and nucleosynthesis in the flows around black holes**

Place & Date: **Department of Physics and Astronomy, University of Nevada, Las Vegas, USA, December 5, 2013**

Title: **Nucleosynthesis in the gamma-ray burst accretion disks and associated outflows**

Place & Date: **Department of Physics, Indian Institute of Science (IISc), Bangalore, September 11, 2012**