

# Curriculum Vitae

## BASIC PROFILE

### DR. GOUTAM MANNA

Assistant Professor (Stage-III)  
Department of Physics (UG & PG)  
Prabhat Kumar College, Contai,  
Purba Medinipur-721404, W.B., India &  
Honorary Associate of Institute of Astronomy Space and  
Earth Science (IASSES), Kolkata

*goutammanna.pkc@gmail.com, goutammanna84@gmail.com*

Contact No: 9433510682

Academic Qualification: M.Sc., Ph.D.



## PERSONAL INFORMATION

<b>Address</b>	:	<u>Permanent:</u> N0083, Ghola Banstala to Kajirhat Road, Joynagar, P.S.-Ghatal, Paschim Medinipur, West Bengal, PIN-721212, India <u>Present:</u> Flat No. BB-4/4, Bhalo-Basa Housing Complex, Hatabari, Ward-9, Contai, Purba Medinipur-721401, W.B., India
<b>Date of Birth</b>	:	02.05.1984
<b>Sex</b>	:	Male
<b>Nationality</b>	:	Indian
<b>Blood Group</b>	:	B+

## SERVICE HISTORY

<b>Date of Joining</b>	:	01.07.2010
<b>Experience in Teaching</b>	:	UG: 13 Years PG: 13 Years

### Area of Teaching:

Year (July, 2010 – June, 2023)	Subjects
1 <sup>st</sup> Year Hons./ 1 <sup>st</sup> & 2 <sup>nd</sup> Sem. (UG)	Mechanics, Special Theory of Relativity, Mathematical Physics, Vectors, Probability
2 <sup>nd</sup> Year Hons./ 3 <sup>rd</sup> & 4 <sup>th</sup> Sem. (UG)	Magnetism, Statistical Mechanics, Quantum Mechanics, Heat
3 <sup>rd</sup> Year Hons./ 5 <sup>th</sup> & 6 <sup>th</sup> Sem. (UG)	Quantum Mechanics, Statistical Mechanics
1 <sup>st</sup> Year M.Sc./1 <sup>st</sup> & 2 <sup>nd</sup> Sem. (PG)	Classical Mechanics, Electromagnetic Theory, Mathematical Methods, Quantum Mechanics (Relativistic and Non-Relativistic).
2 <sup>nd</sup> Year M.Sc./ 3 <sup>rd</sup> & 4 <sup>th</sup> Sem. (PG)	Statistical Mechanics, Quantum Field Theory, General Theory of Relativity, Quantum Mechanics, Particle Physics

## EDUCATIONAL QUALIFICATIONS

Degree	Board/Council/University/Institute	Year	Subject(s)
Ph.D.	University of Calcutta, Kolkata (Bose Institute, Kolkata)	2017 (Date of Award: 23.03.2017)	Gravitation & Cosmology, Dark energy
M.Sc.	B.E.S.U., Shibpur (Now IEST, Shibpur)	2006	Applied Physics
B.Sc. (H)	Vidyasagar University, Midnapore (Midnapore College)	2004	Physics (H), Chemistry (G), Mathematics (G)
H.S.	W.B.C.H.S.E (Rathipur Barada Banipith, Ghatal)	2001	Physics, Chemistry, Mathematics, Biology, Bengali and English
M.P.	W.B.B.S.E (Rathipur Barada Banipith, Ghatal)	1999	Bengali, English, Mathematics, Physical Science, Life Science, History and Geography

**Qualifying Examinations: NET(CSIR-JRF)-2008**

## RESEARCH PROFILE

**Area of Specialization: Gravitation & COSMOLOGY**

**TITLE OF THE PH.D. THESIS:** SOME STUDIES IN EMERGENT GRAVITY AND K-ESSENCE

**Area of Research Interest:** Cosmology, Early Universe, Black Hole Physics, Dark Energy (K-essence theory), Modified theory of gravity ( $f(R)$ ,  $f(R, L(X))$ ,  $f(R, T)$  gravities), Gravitational Collapse, Rainbow theory of gravity, Analogue Gravity, Quantum Gravity etc.

**Research Experience** | 14 yrs

**Fellowship (s) / Award (s):** CSIR FELLOWSHIP, 2009-10; Indo Asian Education Excellence Award 2022 (Gravitation and Cosmology) from REd Talks International: Ratna Prasad Multidisciplinary Research and Educational Society.

**Involvement in Academic/ Professional Organizations:**

- Life Member of Indian Association for General Relativity and Gravitation (IAGRG) from Session 2014-15 (Membership No. 200) and Indian Association of Physics Teachers (IAPT) from Session 2021-22 (Membership No. 13756L8755)
- Member of Contai Science Academy, Contai, Purba Medinipur.

## Publications:

### Books:

- Goutam Manna, **The Hawking temperature and Cosmology in the context of Dark energy, 2018, LAP LAMBERT Academic Publishing, ISBN: 978-613-9-89944-9, 17 Meldrum Street, Beau Bassin 71504, Mauritius.**
- Goutam Manna and Pradipta Panchadhyayee, **Proceedings of National Seminar on Recent Trends in Cosmology & Future Challenges (RTCFC-2015), 2015, Dighalpatra, ISBN: 978-81-87687-61-4, Contai**

### Journals:

1. Bivash Majumder, Saibal Ray and **Goutam Manna**, "*Evaporation of dynamical horizon with the Hawking temperature in the K-essence emergent Vaidya spacetime*", *Fortschritte der Physik*, (2023), (Impact Factor: 3.9), [ ] [<https://www.scopus.com/sourceid/27955#tabs=0>] (Accepted)
2. Surajit Das, Arijit Panda, **Goutam Manna** and Saibal Ray, "*Raychaudhuri equation in k-essence geometry: conditional singular and non-singular cosmological models*", *Fortschritte der Physik*, **71, 2200193**, (2023), (Impact Factor: 5.532), [<https://onlinelibrary.wiley.com/doi/10.1002/prop.202200193>] [<https://www.scopus.com/sourceid/27955#tabs=0>]
3. **Goutam Manna**, Arijit Panda, Aninda karmakar, Md. Rabiul Islam and Saibal Ray " *$f(\bar{R}, L(X))$ -Gravity in the context of dark energy with power-law expansions and Energy Conditions*", *Chinese Physics C*, **47, 02, 025101** (2023), (Impact Factor: 2.944) [<https://iopscience.iop.org/article/10.1088/1674-1137/ac9f8e> ], [<https://www.scopus.com/sourceid/15600154712>]
4. Saibal Ray, Arijit Panda, Bivash Majumder, Md. Rabiul Islam and **Goutam Manna**, "*Collapsing scenario for the k-essence Emergent Vaidya Spacetime in the context of Massive Gravity's Rainbow*" *Chinese Physics C*, **46, 12, 125103** (2022), (Impact Factor: 2.944) [<https://doi.org/10.1088/1674-1137/ac8868>] [<https://www.scopus.com/sourceid/15600154712>]
5. **Goutam Manna**, "*Gravitational collapse for the K-essence Emergent Vaidya Spacetime*" *Eur. Phys. J. C*, **80, 813**, (2020) (Impact Factor: 4.59), [<https://www.scopus.com/sourceid/27545> ], [<https://link.springer.com/article/10.1140/2Fepjc%2Fs10052-019-7066-z> ]
6. **Goutam Manna**, Parthasarathi Majumdar and Bivash Majumder, "*K-essence Emergent Spacetime as Generalized Vaidya Geometry*", *Physical Review D*, **101, 124034**, (2020) (Impact Factor: 5.296), arXiv: gr-qc/1909.07224, [<https://www.scopus.com/sourceid/110157> ], [<https://journals.aps.org/prd/abstract/10.1103/PhysRevD.101.124034> ]
7. Bivash Majumder, **Goutam Manna** and Ashoke Das, "*Time like geodesic structure for the K-essence Emergent Barriola-Vilenkin type Spacetime*", *Classical and Quantum Gravity (CQG)*, **37, 115002**, (2020) (Impact Factor: 3.487), arXiv: gr-qc/2001.03014, [<https://www.scopus.com/sourceid/27433> ], [<https://iopscience.iop.org/article/10.1088/1361-6382/ab86fa> ]
8. **Goutam Manna**, Bivash Majumder and Ashoke Das, "*Thermodynamics for the k-essence Emergent Reissner-Nordstrom-de Sitter Spacetime*", *Eur. Phys. J. Plus* (2020), **135, 107** (Impact Factor: 2.612), [<https://www.scopus.com/sourceid/21100201754> ], [<https://link.springer.com/article/10.1140/epjp/s13360-020-00177-2> ]

9. **Goutam Manna** and Bivash Majumder, "*The Hawking temperature in the context of dark energy for Kerr-Newman and Kerr-Newman-AdS background*", *Eur. Phys. J. C* (2019) 79, 553 (Impact Factor: 4.389), [<https://www.scopus.com/sourceid/27545> ], [<https://link.springer.com/article/10.1140%2Fepjc%2Fs10052-019-7066-z> ]
10. **Goutam Manna** and Debashis Gangopadhyay , "*The Hawking temperature in the context of dark energy for Reissner-Nordstrom and Kerr background*", *Eur. Phys. J. C* (2014) 74:2811 (Impact Factor: 5.436), ), [<https://www.scopus.com/sourceid/27545>], [<https://link.springer.com/article/10.1140%2Fepjc%2Fs10052-014-2811-9>]
11. Debashis Gangopadhyay and **Goutam Manna**, "*The Hawking temperature in the context of dark energy*", *EPL*, 100 (2012) 49001 (Impact Factor: 2.753); [<https://www.scopus.com/sourceid/27551>], [<https://iopscience.iop.org/article/10.1209/0295-5075/100/49001/meta> ]
12. Bivash Majumder, **Goutam Manna** and Saibal Ray, "*Null Geodesic structure for the k-essence emergent Barriola Vilenkin spacetime*" (2023) (Communicated)
13. Arijit Panda, Surajit Das, **Goutam Manna**, Saibal Ray, Md. Rabiul Islam, Chayan Ranjit "*f(R,T)-gravity in a Non-canonical theory*", *arXiv :gr-qc/2206.14808v2* (2023) (Communicated)
14. Arijit Panda, Surajit Das, **Goutam Manna**, Saibal Ray, "*Reconstruction of f(R,T) gravity model via the Raychaudhuri equation*", *arXiv: submit/5044252* (2023) (Communicated)
15. Debashis Gangopadhyay and **Goutam Manna**, '*Cosmology in presence of dark energy in an emergent gravity scenario*', *arXiv: gr-qc/1502.06255* (2015).
16. Debashis Gangopadhyay, **Goutam Manna** and Sourav Sen Choudhury, "*Masking singularities with k-essence fields in an emergent gravity metric*", *arXiv: gr-qc/1103.3380* (2011).

**N.B.:** Five papers are to be communicated in the near future (1. Related to the dynamical horizon, 2. Related to f(R,T)-gravity, 3. Related to Quantum fields in curved spacetime, 4. Related to Gravitational collapse, 5. Related to Black hole thermodynamics).

#### Ph.D. Guidance

- **Mr. Bivash Majumder** (NET(LS), December-2011, Faculty, Dept. of Mathematics, P.K.College, Contai): Registered at Raiganj University, Raiganj, West Bengal.
- **Mr. Arijit Panda**, Registered at Raiganj University, Raiganj, West Bengal (WBDST project student at Prabhat Kumar College, Contai, Vidyasagar University, Midnapore, West Bengal).
- *Also I have guided several students in their Master degree projects and Summer Research Project.*

#### SPONSORED PROJECT

- Title of the Project: "**Some Studies on f(R) Gravity and Dark Energy**". Sponsored by Department of Science & Technology and Biotechnology (WBDSTB), Government of West Bengal, Memo No. 322(Sanc.)/ST/P/S&T/16G-3/2018 dated 06.03.2019, Amount: Rs. 900900/-, Tenure: Three Years.

## Collaborators

- **Prof. Parthasarathi Majumdar**, Visiting Professor, IACS, Kolkata; Ex-professor, RKMVERI, Belur Math, Howrah and SINP, Kolkata
- **Prof. Debashis Gangopadhyay**, Professor, SNU, Kolkata; Ex-professor, RKMVERI, Belur Math, Howrah and SNBNCBS, Kolkata
- **Dr. Saibal Ray**, Associate Director & Professor, Centre for Cosmology, Astrophysics and Space Science (CCASS), GLA University, Mathura, UP, India
- **Dr. João Luís Rosa**, Institute of Physics, University of Tartu, Estonia
- **Dr. Ashoke Das**, Associate Professor, Department of Mathematics, Raiganj University, Raiganj, Uttar Dinajpur, W.B.
- **Dr. Chayan Ranjit**, Department of Mathematics, Egra S S B College, Egra, Purba Medinipur, West Bengal
- **Dr. Md. Rabiul Islam**, Department of Physics, Raiganj University, Raiganj, Uttar Dinajpur, West Bengal.

## Paper present at the Conference/Seminar or Invited talk:

- Presented a poster entitled **“K-essence Emergent Spacetime as Generalized Vaidya Spacetime”** in the **International Conference on Gravitation & Cosmology (ICGC)** held at IISER, Mohali, Date: 10-13<sup>th</sup> December, 2019
- Presented a talk entitled **“Gravitational Collapse for the K-essence Vaidya Spacetime”** in the **International Conference on Emerging Issues in Cosmology and Particle Physics (EICP2)** held at Visva Bharati, Santiniketan, Birbhum, West Bengal Date: 12-14<sup>th</sup> January, 2020
- Presented a **Popular Level Interactive Lecture** on **“The Introduction to General Theory of Relativity”** on 15<sup>th</sup> November, 2021 organized by **Jagadish Bose National Science Talent Search**, Dept. of Higher Education, Govt. of West Bengal & Vigyan Prasar, Department of Science and Technology, Govt. of India.
- Presented a talk entitled **“Hawking radiation with the dynamical horizon in the K-essence emergent spacetime”** in the **32<sup>nd</sup> meeting (National Conference) of Indian Association for General Relativity and Gravitation (IAGRG32)** held at IISER, Kolkata, West Bengal Date: 19-21<sup>th</sup> December, 2022
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## Reviewer of Journals

- Advances in Astronomy, ISSN: 1687-7969 (Print), 1687-7977(Online).
- Physica Scripta, ISSN: 1402-4896 (Online), 0031-8949 (Print).
- The European Physical Journal C (EPJC): ISSN: 1434-6052 (Electronic Edition)
- SciPost Physics: ISSN: 2542-4653
- Journal of Modern and Applied Physics



## ADMINISTRATIVE ACTIVITIES

- Member of Board of Academic Committee (BOAC), Department of Physics, IEST, Shibpur
- Programme Co-ordinator of NSS Unit-1 ( 1<sup>st</sup> August, 2015 – 30<sup>th</sup> November, 2018 )
- Member of P.G. Examination Cell (Session: 2015-2016, 2016-17, 2017-18)
- Member of Admission Committee (Session: 2014-2015)
- Member of Routine Committee (Session: 2013-2014, 2017-2018)
- Member of Board of Studies in Physics (P.G.) (From 1<sup>st</sup> April, 2017 to 31<sup>st</sup> December, 2020)
- Member of IQAC, P.K.College, Contai (From 1<sup>st</sup> April, 2017)
- University Nominee, UGC Building Committee of Panskura Banamali College during XII plan from session 2014-15
- Member of Academic Sub-Committee (From 1<sup>st</sup> April, 2017 to 31<sup>st</sup> December, 2020)
- HOD of Department of Physics (1<sup>st</sup> April, 2017-31<sup>st</sup> December, 2020)
- Board Observer for the West Bengal Joint Entrance Examination (WBJEE-2018,2019,2020,2022,2023)
- Member of Governing Body, Prabhat Kumar College, Contai (01.11.2018-15.01.2021)
- Member of Finance Sub-Committee, Prabhat Kumar College, Contai (01.11.2018-15.01.2021)
- Member of Purchase Committee, Prabhat Kumar College, Contai (From Session 2021-2022)
- Member of Science Journal Committee, Prabhat Kumar College, Contai (From Session 2021-2022)
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## ATTENDING REFRESHERS COURSE/ ORIENTATION PROGRAMME/ SHORT TERM COURSE :

- UGC-Sponsored Orientation Programme, organized by University of Calcutta, 15<sup>th</sup> July to 12<sup>th</sup> August, 2014 (No. 106)
- RC: UGC-HRDC, Ranchi University, Ranchi, "Environmental Studies & Disaster Management", 12.07.2016 to 01.08.2016
- RC: UGC-HRDC, Ranchi University, Ranchi, "Environmental Studies & Disaster Management", 08.06.2018 to 28.06.2018
- RC: UGC-HRDC, The University of Burdwan, Burdwan, "Recent Advances in Science & Technology", 20.08.2021 to 02.09.2021
- NSS: Orientation Course, Training Orientation & Research Centre, Ramakrishna Mission Ashrama, Narendrapur, Kolkata-700013, W.B., India, 20.09.2015 to 26.09.2015

## Conference/Seminar/Workshop Organized/Participate:

- **International Conference on 75 YEARS OF QUANTUM ENTANGLEMENT** organized by SNBSCBS, KOLKATA, date: 06-10.01.2011
- **One day workshop on GENERAL RELATIVITY, GRAVITATION and COSMOLOGY** organized by RKMVU, BELUR MATH, Howrah, date: 05.03.2011
- **DST Sponsored INSPIRE Camp on BASIC SCIENCES** organized by Prabhat Kumar College, Contai, date: 26-30.07.2011
- **UGC Sponsored National Seminar on 50 YEARS OF LASER: PROMISES & CHALLENGES** organized by Prabhat Kumar College, Contai, date: 08-09.01.2012

- **International conference on NEW TRENDS IN FIELD THEORIES** organized by BHU, VARANASI, date: 23-26.11.2012
- **UGC Sponsored National Workshop on GENERAL THEORY OF RELATIVITY AND COSMOLOGY** organized by Midnapore College, Midnapore, date:12-14.02.2013
- **National Seminar on RECENT TRENDS IN COSMOLOGY & FUTURE CHALLENGES (RTCFC-2015)** organized at Prabhat Kumar College, Contai, date: 03-04.12.2015 (Act as Joint Secretary)
- **Purba Medinipur District Student Youth Science Fair, 2016, during 22 - 23<sup>rd</sup> December, 2016.** (Act as Convenor)
- **Purba Medinipur District Student Youth Science Fair, 2017, during 15 - 16<sup>th</sup> January, 2018.** (Act as Coordinator)
- **One-Day State Level Seminar-cum-Workshop on UNDERSTANDING SOME CONCEPTS OF PHYSICAL SCIENCE** Organized by Department of Physics (UG & PG) & Internal Quality Assurance Cell, Prabhat Kumar College, Contai In association with ANURANAN Science Awareness Society, Kolkata. Date: 17<sup>th</sup> February, 2018
- **Women's Education and Empowerment -A Dream of Nivedita**, 28<sup>th</sup> March, 2018, at Prabhat Kumar College, Contai, (Act as an Organizing member)
- **Two-Day State Level Workshop on Computer Programming & Applications (WCPA 18)**, Organised by Department of Physics (UG & PG), Prabhat Kumar College, Contai, In association with IQAC, P.K.College, Contai, July 12-13, 2018. (Act as one of the Secretary)
- **Interactive Workshop on Experimental Physics (IWEP-2019)**, Organized by Dept. of Physics, P.K.College, Contai, Sponsored by West Bengal State Council of Science and Technology, Date: 13-15<sup>th</sup> September, 2019 (Act as Programme Co-ordinator)
- **One day National Seminar on "Vidyasagar in Education: Past and Present"** organized by NAAC Committee, P.K.College, Contai In Collaboration with Ramnagar College, Date: 05.02.2020 (Act as a Joint Coordinator)
- **Webinar on "Onset of Deconfinement after Lockdown and the Quark-Gluon Plasma"** organized by Department of Physics, School of Basic and Applied Sciences, Adamas University, Kolkata, Date: 31.05.2020
- **International Webinar on " Impact of COVID-19 on Higher Education & A Quest for possible alternatives"** organized by Sukanta Mahavidyalaya, Dhupguri, Jalpaiguri, WB, India, Date: 22-24<sup>th</sup> June, 2020.
- **International Webinar (Lecture Series) on "Quantum World: Past, Present & Future"** organized by Department of Physics (UG & PG), Prabhat Kumar College, Contai, Purba Medinipur, WB-721404, India, Date: July 3,8 and 11, 2020 (Act as a Convener).
- **"IP Awareness/ Training Programme"** under National Intellectual Property Awareness Mission, Ministry Commerce and Industry, Govt. of India organized by Intellectual Property Office, India, Date: 28<sup>th</sup> February, 2022.
- **One Day Webinar on "Gravitational Wave - The Song of The Cosmos"** organized by Asansol Girls' College, Date: 4<sup>th</sup> August, 2021
- **Webinar on "First Training Programme on Fundamentals of Python Language"** organized by West Bengal State Council of Higher Education, Govt. of West Bengal, Date: 16<sup>th</sup> Feb. to 3<sup>rd</sup> March, 2022

Date:  
Place: Contai

*Goutam Manna*  
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