

## CURRICULUM VITAE

**Name** : Dr. DEBIKA KANGSHA BANIK  
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Dibru College,  
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**Email** : debikabanik05@gmail.com  
**Date of Birth** : 5<sup>th</sup> September, 1990

### Educational Qualification:

- Ph.D. from Department of Physics, Dibrugarh University, Dibrugarh Assam, 2021.
- M. Phil from Department of Physics, Dibrugarh University, Dibrugarh Assam, 2016.
- M.Sc. from Department of Physics, Tezpur University, Tezpur Assam, 2014.
- B.Sc (Major in Physics) from Moran College, Moranhat, Assam, 2012.

### Academic Achievement:

- Obtained 2<sup>nd</sup> rank in B. Sc in Physics (with Distinction) in Dibrugarh University, 2012
- Secured highest marks in B. Sc. in Sivasagar District, 2012.
- Obtained 2<sup>nd</sup> rank in M. Sc (Physics) in Tezpur University, 2014.
- Qualified State Eligibility Test (SET) for Lecturership in the year 2017.

### Specialization/ Areas of Interest:

High Energy Physics, General Theory of Relativity, Modified Theory of Gravity

### Teaching Experience:

- Worked as an Assistant Professor in the Department of Physics, Barnagar College, Sorbhog, Assam, from 12<sup>th</sup> October, 2018 to 26<sup>th</sup> September, 2022.
- Working as an Assistant Professor in the Department of Physics, Dibru College, Dibrugarh, Assam since 27<sup>th</sup> September, 2022 to till date.

### Publications:

1. **Debika K Banik**, Sebika K Banik and K Bhuyan, ‘Dynamics of Bianchi I cosmologies in  $f(R)$  gravity in the Palatini formalism’, *Indian J. Phys.* **91**(1) 109-119 (2016). DOI 10.1007/s12648-016-0898-6

2. **Debika K Banik**, Sebika K Banik and K Bhuyan, ‘Anisotropic Bianchi type-III model in Palatini  $f(R)$  gravity’, *Astrophys. Space Sci.* **362** 51 (2017). DOI 10.1007/s 10509-017-3031-1
3. **Debika Kangsha Banik**, Sebika Kangsha Banik and Kalyan Bhuyan, ‘Bianchi V cosmological model in Palatini  $f(R)$  gravity’, *Gen. Relativ. Gravit.* **50** 13 (2017). DOI 10.1007/s10714-017-2334-4.
4. Sebika Kangsha Banik, **Debika Kangsha Banik** and Kalyan Bhuyan, ‘A dynamical system approach to Bianchi III cosmology for Hu–Sawicki type  $f(R)$  gravity’, *Gen. Relativ. Gravit.* **50** 24 (2018). DOI 10.1007/s10714-018-2345-9.
5. **Debika K Banik**, Sebika K Banik and K Bhuyan, ‘Dynamical system approach to Born-Infeld  $f(R)$  gravity in Palatini formalism’, *Phy. Rev. D* **97** 124041 (2018).
6. **Debika K Banik**, Sebika K Banik and K Bhuyan, ‘Bianchi I and V cosmologies with Hu-Sawicki  $f(R)$  gravity in Palatini formalism’, *J. Phys. Commun.* **2** 115017 (2018).
7. **Debika K Banik**, Sebika K Banik and K Bhuyan, ‘Dynamics of Hu–Sawicki model in Born–Infeld  $f(R)$  gravity theory’, *Gen. Relativ. Gravit.* **54** 29 (2022) DOI 10.1007/s10714-022-02919-2.

#### **List of papers published in conference proceedings:**

1. **Debika K Banik**, Sebika K Banik & K Bhuyan, ‘Dynamics of Homogeneous, Anisotropic Bianchi I cosmology in  $f(R)$  gravity in Palatini Formalism’, CICAHEP, Vol. 1, pp. 58-62 (2016).
2. **Debika K Banik**, Sebika K Banik & K Bhuyan, ‘Bianchi I cosmologies for the form  $f(R)=R+\alpha R^m-\beta/R^n$  using the Palatini Formalism’, Proceedings of PANE-2016 (Recent Advances in Physics Research and its Relevance), pp. 215-221 (2017). ISBN: 978-93-86256-85-0
3. **Debika K. Banik**, Sebika K. Banik and K. Bhuyan, Bianchi III Cosmologies for the form  $f(R) = R-\beta/R^n$  using the Palatini formalism, Springer Proceedings in Physics, 203 (2018). DOI: 10.1007/978-3-319-73171-1\_160

#### **Book Chapters**

1. **Debika Kangsha Banik** and Sebika Kangsha Banik

**Chapter:** The Accelerated Expansion of the Universe

**Book:** Frontiers in Basic Physics and Applications (Vol. II), ISBN: 978-81-948719-3-4 (2021)

**Editor:** Dr. Debika Kangsha Banik, Dr. Nayan Mani Nath, Dr. Sebika Kangsha Banik and Dr. Kamal Jyoti Nath

2. Sebika Kangsha Banik and **Debika Kangsha Banik**

**Chapter:** Constructing a dynamical system for flat FLRW model

**Book:** Frontiers in Basic Physics and Applications (Vol. II), ISBN: 978-81-948719-3-4 (2021)

**Editor:** Dr. Debika Kangsha Banik, Dr. Nayan Mani Nath, Dr. Sebika Kangsha Banik and Dr. Kamal Jyoti Nath

**Paper Presentation:**

1. **D K Banik**, S K Banik & K Bhuyan, “*Dynamics of Homogeneous, Anisotropic Bianchi I cosmology in  $f(R)$  gravity in Palatini Formalism*”, National Conference on Current Issues in Cosmology, Astrophysics and High Energy Physics, held in Dibrugarh University, Assam on 2-5<sup>th</sup> November, 2015.
2. **D K Banik**, S K Banik and K Bhuyan, “*Bianchi I cosmologies for the form  $f(R)=R+\alpha R^m-\beta/R^n$  using the Palatini Formalism*”, X<sup>th</sup> biennial National Conference of Physics Academy of North East (PANE), organized by Physics Department, St. Anthony’s College, Shillong from 10<sup>th</sup> to 12<sup>th</sup> November, 2016.
3. **D K Banik**, S K Banik and K Bhuyan, “*Bianchi III cosmologies for the form  $f(R)=R-\beta/R^n$  using the Palatini Formalism*”, XXII DAE-BRNS High Energy Physics Symposium, held at Department of Physics and Astrophysics, University of Delhi, Delhi, India during December 12-16, 2016.
4. **D K Banik**, S K Banik and K Bhuyan, “*A Dynamical System Analysis in Palatini  $f(R)$  gravity in Bianchi I cosmology*”, National Workshop on Celebrating the Century of Einstein’s General Relativity – 2017: Hundred years with ‘ $\Lambda$ ’ (CCEGR-2017), organized by Department of Mathematics, University of Burdwan, Burdwan, West Bengal, India during 26<sup>th</sup> July to 1<sup>st</sup> August, 2017.
5. **D K Banik**, S K Banik and K Bhuyan, “*Anisotropic Bianchi I cosmology for Hu-Sawicki model in Born-Infeld  $f(R)$  gravity*”, National Conference on Emerging Trends in Advanced Mathematical Sciences and Its interdisciplinary Areas, organized by Department of Mathematical Sciences, Bodoland University, Kokrajhar, Assam, India during 21<sup>th</sup> to 22<sup>th</sup> February, 2020.
6. **D K Banik**, S K Banik and K Bhuyan, “*Isotropic as well as Anisotropic cosmologies in Born-Infeld  $f(R)$  gravity*”, 2<sup>nd</sup> Annual National Conference Trends in Modern Physics 2020 (TIMP 2020), organized by Department of Physics, Assam Don Bosco University, Tapesia Gardens, Sonapur, Assam., India during 24<sup>th</sup> to 25<sup>th</sup> February, 2020.

7. **D K Banik**, S K Banik and K Bhuyan, “*Anisotropic Bianchi I cosmology for Hu-Sawicki model in Born-Infeld  $f(R)$  gravity*”, 2<sup>nd</sup> Annual National Conference Trends in Modern Physics 2020 (TIMP 2020), organized by Department of Physics, Assam Don Bosco University, Tapesia Gardens, Sonapur, Assam., India during 24<sup>th</sup> to 25<sup>th</sup> February, 2020.
8. **D K Banik**, “*Born-Infeld  $f(R)$  Gravity in the Background of Isotropic FLRW Model*” International e-Poster Conference on “*Advances in Physics and Applications (APA-2020)*”, organized by Department of Physics in collaboration with Internal Quality Assurance Cell (IQAC), Duliajan College, Duliajan, Dibrugarh, from 23<sup>rd</sup> to 28<sup>th</sup> November, 2020.
9. **D K Banik**, “*Bianchi V Cosmology for  $\Lambda$ CDM Model in Palatini  $f(R)$  gravity*” Second International Conference on “*Advances in Physics and Applications (APA-2021)*”, organized by Department of Physics in collaboration with Internal Quality Assurance Cell (IQAC), Duliajan College, Duliajan, Dibrugarh, from 26<sup>th</sup> to 27<sup>th</sup> November, 2021.
10. **D K Banik**, “ *$\Lambda$ CDM Model in Born-Infeld  $f(R)$  Gravity in the Background of Bianchi I Cosmology*” XII Biennial National Conference of Physics Academy of North East (PANE 2021), organized by Department of Physics, Tripura University, from 15<sup>th</sup> to 17<sup>th</sup> December, 2021.
11. **D K Banik**, “*Cosmological Dynamics of Bianchi I model in Palatini  $f(R)$  gravity*” 32<sup>nd</sup> meeting of Indian Association for General Relativity and Gravitation (IAGRG32), organized by, IISER Kolkata, from 19<sup>th</sup> to 21<sup>st</sup> December, 2022.
12. **D K Banik**, “*Palatini  $f(R)$  gravity in the background of Anisotropic Bianchi I Cosmology*” National Conference on Current Trends in Basic Science and its Applications (NCCTBSA24), organized by, Tinsukia College, from 22<sup>nd</sup> to 23<sup>rd</sup> January, 2024.

### **Orientation Programme/ Faculty Induction Programme Attended**

1. 4-Week Induction/Orientation Programme for "Faculty in Universities/Colleges/Institutes of Higher Education" organised by Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of MHRD, Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) from 26<sup>th</sup> June to 24<sup>th</sup> July 2020.
2. 30th Orientation Course organized by the UGC Human Resource Development Centre, Mizoram University during 28<sup>th</sup> July – 17<sup>th</sup> August, 2020.
3. 8th Faculty Induction Programme organized by the UGC, Malaviya Mission Teacher Training Centre, Mizoram University during 26<sup>th</sup> October – 22<sup>nd</sup> November, 2023.

### **Refresher Course Attended**

1. Online Two-Week Refresher Course in “Physics” organised by Teaching Learning Centre, Ramanujan College, University of Delhi in collaboration with Department of Physics, Harish Chandra Post Graduate College, Varanasi, Uttar Pradesh and Department of Physics, Hemvati Nandan Bahuguna Garhwal University, Srinagar, Garhwal, Uttarakhand, under the aegis of Ministry of Education Pandit Madan Mohan Malaviya National Mission on Teachers And Teaching from 27 October – 10 November, 2021.

### **FDP Attended**

1. Online Faculty Development Program on “Advanced Materials for Energy Harvesting, Conversion and Storage” organized by Department of Science and Humanities, MLR Institute of Technology, Hyderabad during 19<sup>th</sup> – 23<sup>rd</sup> June, 2020.
2. 5 Days Online Faculty Development Program (FDP) on “LaTeX+Xfig” organised by Department of Computer Science, North Lakhimpur College (Autonomous) under the aegis of IQAC, North Lakhimpur College (Autonomous), Assam in association with IIT Bombay Spoken Tutorial (An Initiative of National Mission on Education through ICT, MHRD, Govt. of India) from June 20<sup>th</sup> to 24<sup>th</sup> June, 2020.
3. One-week Online Training Programme on “e-Learning in Higher Education” organised by IQAC, Pandu College, Guwahati, in Association with Rabindranath Tagore University, Hojai & Indian Association of Special Libraries and Information Centres, NE Zone from 1<sup>st</sup> to 07<sup>th</sup> July, 2020
4. One Week Faculty Development Programme on “Python 3.4.3” from 27<sup>th</sup> August, 2020 to 2<sup>nd</sup> September, 2020, organized by Department of Physics & Internal Quality Assurance Cell (IQAC) Barnagar College, Sorbhog, Barpeta, Assam, in association with Spoken Tutorial, IIT Bombay (An Initiative of NMEICT, MHRD, Govt. of India promoting the usage of Open Source Software) under the PMMMNTT scheme.

### **Short Term Courses Attended**

1. One Week Short Term Course on “Computer Programming in Physics” organised by Department of Physics & Academic Branch, Dibrugarh University, Assam from 1<sup>st</sup> to 07<sup>th</sup> July, 2019
2. Basics of Special Theory of Relativity, organised by IIT Kanpur, from 18<sup>th</sup> December 2018 to 8<sup>th</sup> March 2019.
3. Advanced Course on Special theory of Relativity, organised by IIT Kanpur, from 26<sup>th</sup> January to 19<sup>th</sup> May, 2020.

4. Learning Physics Through Simple Experiments, organised by IIT Kanpur, from 2<sup>nd</sup> April to 10<sup>th</sup> June, 2020.
5. Classical Electromagnetism - 1 (Electrostatics), organised by IIT Kanpur, from 15<sup>th</sup> August to 13<sup>th</sup> December, 2020.
6. Classical Mechanics - 1, organised by IIT Kanpur, from 26<sup>th</sup> January to 25<sup>th</sup> April, 2021.
7. The Story of Photoelectric Effect organised by IIT Kanpur, from 15<sup>th</sup> July to 17<sup>th</sup> August, 2021.
8. Classical Electromagnetism - 2 (Magnetostatics), organised by IIT Kanpur, from 15<sup>th</sup> August to 25<sup>th</sup> December, 2022.

### **Webinar Organised**

National Webinar on “Frontiers in Basic Physics and Applications” organised by Department of Physics in collaboration with Internal Quality Assurance Cell (IQAC) Barnagar College, Sorbhog, Assam, held on 21<sup>st</sup> & 22<sup>nd</sup> August, 2020

### **FDP Organised**

One Week Faculty Development Programme on “Python 3.4.3” from 27<sup>th</sup> August, 2020 to 2<sup>nd</sup> September, 2020, organized by Department of Physics & Internal Quality Assurance Cell (IQAC) Barnagar College, Sorbhog, Barpeta, Assam, in association with Spoken Tutorial, IIT Bombay (An Initiative of NMEICT, MHRD, Govt. of India promoting the usage of Open Source Software) under the PMMMNMTT scheme.

### **Edited Book**

1. Frontiers in Basic Physics and Applications, Knowledge Publication, 2020. ISBN 978-81-933014-8-7
2. Frontiers in Basic Physics and Applications (Vol. II), Knowledge Publication, 2021. ISBN: 978-81-948719-3-4 ()

### **Life member of**

1. Assam Science Society
2. Assam Academy of Mathematics

### **Member of Reputed Bodies**

1. Assam College Teacher Association
2. Dibru College Teacher Association