

Hrishikesh Chakrabarty | CV

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Personal Information

- Father's Name: Sailendra Nath Chakrabarty
- Date of Birth: 19th July, 1993
- Nationality: Indian
- Marital Status: Single

Education

- **Fudan University** **Shanghai, China**
PhD, Theoretical Physics
Supervisor: Prof. Cosimo Bambi
2017–Present
- **Tezpur University** **Tezpur, Assam**
(5 year Integrated) Master of Science, Physics
Thesis: Inflationary Cosmology: A Study on Starobinsky and Higgs Model
Supervisor: Dr. Debasish Borah, Dr. Amit Pathak
2011–2016
Project: Planck results favour single field inflation models and one of such model is non-minimally coupled Higgs inflation. Another possible origin of inflation is modified gravity in the early stage of universe which itself produces an inflaton field. We investigated possibilities of combined action of these two models in accordance with observation.
- **Darrang College** **Tezpur Assam**
Higher Secondary, Science stream
2009–2011
- **BBCM Sankardev Vidya Niketan** **North Lakhimpur, Assam**
HSLC Examination, High school
2009

Research Interests

My research is focused on Gravity, its classical and quantum aspects. Currently I am involved in several directions in this field. They are listed below:

- We are working on a model of gravitational collapse of a non-interacting dust cloud described by Oppenheimer-Snyder-Datt model with quantum gravity corrections. As a result, we have a bounce instead of a singularity formation. Our model supports the conjecture according to which a suitable theory of quantum gravity can solve the singularity problem.
- I also work on studying the stability and the spacetime properties of different solutions of Einstein's gravity or other extended/modified theories of gravity. This direction also involves finding new solutions in modified and extended theories of gravity.

Publications and Preprints

- Scalar perturbations and quasi-normal modes of a nonlinear magnetic-charged black hole surrounded by quintessence
H. Chakrabarty, A. Abdujabbarov, C. Bambi Eur.Phys.J. C79 (2019) no.3, 179
- Weak gravitational lensing: a compact object with arbitrary quadrupole moment immersed in plasma
H. Chakrabarty, A. Abdikamalov, A. Abdujabbarov, C. Bambi Phys.Rev. D98 (2018) no.2, 024022
- Unattainable extended spacetime regions in conformal gravity
H. Chakrabarty, C. A. Benavides-Gallego, C. Bambi, L. Modesto JHEP 1803 (2018) 013

Teaching Experience

- **Darrang College**
Ad-hoc Lecturer Aug, 2016– Feb, 2017
Taught courses: Classical Mechanics, Mathematical Physics, Relativity and Thermodynamics.
- **Army Public School, Tezpur**
Postgraduate Teacher April, 2017– August, 2017

Other Research Experience

- *Visiting Research Fellow*
Harish-Chandra Research Institute, Allahabad, India
Project Title: A Study of Magnetohydrodynamic Structure of Accretion Disc
Supervisor: Prof. Tapas Das
- *Visiting Research Fellow*
Harish-Chandra Research Institute, Allahabad, India
Project Title: Hydrodynamic Study of Accretion Disc: Shakura-Sunyaev Solution.
Supervisor: Prof. Tapas Das
- *Minor Project*
Tezpur University, Assam, India
Project Title: Gravitational waves: Generation and Propagation.
Supervisor: Dr. Debasish Borah
- *Summer Research Fellow*
UM-DAE Center for Excellence in Basic Sciences, Mumbai, India
Project Title: Spinning Test Particles in General Relativity
Supervisor: Dr. Tapan Naskar

Computer skills

- **Basic:** c, FORTRAN, Octave
- **Intermediate:** Python, GNU-plot
- **Advanced:** \LaTeX , Mathematica, Maple, Linux

Workshops/Schools/Conferences Attended

- **Recent Progresses in Relativistic Astrophysics**
Fudan University, Shanghai, China *May-2019*
- **Asian-Pacific Winter School and Workshop on Gravitation and Cosmology**
Yukawa Institute for theoretical Physics, Kyoto, Japan *February-2019*
- **International Conference on Quantum Gravity**
SUSTech, Shenzhen, China *March-2018*
- **Thirty Meter Telescope-Science and Instrumentation Meeting**
Tezpur University, Tezpur, India *December-2015*
- **North-East Meet of Astronomers, NEMA**
Tezpur University, Tezpur, India *November-2015*
- **Workshop on Computational Aspects of Research in Physics**
Tezpur university, Tezpur, India *October-2014*
- **Pulsar Observatory for Students(POS-2014)**
Radio Astronomy Center, Ooty, India *July-2014*
- **IUCAA-CCSU Summer School in Astronomy and Astrophysics**
Cotton College State University, Guwahati, Assam *June-2014*
- **Radio Astronomy Winter School**
National Center for Radio Astronomy, Pune, India *December-2013*
- **IUCAA sponsored workshop on IR astronomy and Data analysis**
Tezpur University, Tezpur, India *March-2013*
- **BITS-IUCAA Workshop on Gravitational Wave data analysis**
BITS-Pilani, KK Birla Goa Campus, Goa, India *December-2012*

Posters/Talks presented

- **Avoiding singularities in conformal gravity**
Asian-Pacific Winter School and Workshop on Gravitation and Cosmology, Yukawa institute for theoretical physics, February-2019
- **Acoustic Blackholes: Propagation of Acoustic Disturbances in A Inhomogeneous Flowing Fluid.**
North-East Meet of Astronomers, Tezpur University, November-2015
- **Powerlaw Extension of Higgs and Starobinsky Inflation**
North-East Meet of Astronomers-II, Tezpur University, December-2016

Awards and Honours

- **2017** Chinese Government Scholarship for Doctoral Studies
Awarded by the Government of People's Republic of China
- **2015** Space Science Promotion Scheme Scholarship
Awarded by Indian Space Research Organisation, ISRO
- **2015** Research Fellowship
Awarded by Harish-Chandra Research Institute, Allahabad

- **2014** Research Fellowship
Awarded by Harish-Chandra Research Institute, Allahabad
- **2009:** Anundaram Barua Award
Awarded by the Government of Assam to first division holders in school leaving examination.

References

Available upon request. Please email.