Mami **Deka**

PhD Student · Astronomy & Astrophysics

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"Be the change that you want to see in the world."

Education

Cotton University — *Guwahati, India*

PhD candidate in Astrophysics — *01/02/2020 - present*

- Advisor: Dr. Sukanta Deb

Gauhati University — *Guwahati, India*

MSc in Physics — *August, 2016 - June, 2018*

- Advisor: Prof. Madhurjya P Bora
- Specialization- Astrophysics, General theory of relativity and Cosmology

Nalbari College, Gauhati University — *Nalbari, Assam, India*

BSc in Physics — *August, 2012 - June, 2015*

- Minors in Mathematics and Chemistry

Research Experience

Cotton University - Dept of Physics — *Guwahati, India*

PHD CANDIDATE IN ASTROPHYSICS — *February, 2020 - Present*

- Advisor: Dr. Sukanta Deb
- Thesis: "Variable Stars as Astrophysical Laboratories"

Max Planc Institue for Astrophysics — *Garching, Germany*

MPA-Kavli Summer Fellow — *June, 2023 - August, 2023*

- Advisor: Dr. Felix Ahlborn, Heidelberg Institute for Theoretical Studies, Germany and Prof. Achim Weiss, MPA - Garching
- Project Title: "Core helium burning using turbulent convection models in intermediate and massive stars: Implications for Cepheid models"

Cotton University - Dept of Physics — *Guwahati, India*

Junior Research Fellow, CSIR Project — *October, 2019 - September, 2022*

- Advisor: Dr. Sukanta Deb
- Thesis: "Variable Stars as Astrophysical Laboratories"

Konkoly Observatory — *Budapest, Hungary*

IAU International Spring School — *April,2023*

- Modern methods of cosmic distance determination

Lyon (LIO, CRAL CNRS UMR5574, UCBL1) and IUCAA — *IUCAA, Pune, India.*

7rd Indo-French Astronomy School " on "Spectroscopy, Treasures in the voxels — *November, 2022*

- Advisor: Jens-Kristian Krogager (CRAL, Lyon, France)
- Project Title: "Chemical composition of neutral gas in a distant galaxy"

Gauhati University - Dept of Physics — *Guwahati, India*

MSc Thesis Research Project — *August, 2017 - June, 2018*

- Advisor: Prof. Madhurjya P Bora,
- Thesis: "Magnetorotational Instability in Accretion Disks"

Birla Institute of Technology and Science, Pilani — *Hyderabad, India*

Pulsar Astronomy with uGMRT Boot-Camp & Multi-Wavelength Neutron Star Workshop — *January, 2018*

Awards, Fellowships, & Grants

2023 **Kavli Summer Fellowship**, Kavli Foundation & Max Planck Institue for Astrophysics

2023 **International Travel Grant**, Science and Engineering Research Board (SERB), Government of India

2021 **State Level Eligibility Test (SLET) in Physics**, SLET Commission, Assam

2021 **Graduate Aptitude Test in Engineering (GATE) in Physics**, Indian Institute of Technology (IITs

2020 **NET-LS in Physical Science**, Council of Scientific and Industrial Research (CSIR), India

2019 **NET-LS in Physical Science**, Council of Scientific and Industrial Research (CSIR), India

2016-2018 **NEC Merit Scholarship**, North Eastern Council (NEC), India

Publications

Published

Kerdaris Kurbah, Sukanta Deb, Shashi M Kanbur, Susmita Das, **Mami Deka**, Anupam Bhardwaj, Hugh Riley Randall, Selim Kalici. **A multiphase study of theoretical and observed light curves of classical Cepheids in the Magellanic Clouds**, Monthly Notices of the Royal Astronomical Society, Volume 521, Issue 4, June 2023, Pages 6034–6052, `https://doi.org/10.1093/mnras/stad806`

Mami Deka, Shashi M Kanbur, Sukanta Deb, Susmita Das, Kerdaris Kurbah, Earl P Bellinger, Anupam Bhardwaj. **Period-Colour and Amplitude-Colour relations for OGLE-δ Scuti stars in the Galactic Bulge and LMC**, Monthly Notices of the Royal Astronomical Society, stac2457, `https://doi.org/10.1093/mnras/stac2457`

Mami Deka, Sukanta Deb, Kerdaris Kurbah. **An MCMC approach to the three-dimensional structure of the Milky Way bulge using OGLE-IV δ Scuti stars**, Monthly Notices of the Royal Astronomical Society, Volume 514, Issue 3, August 2022, Pages 3984–3992, `https://doi.org/10.1093/mnras/stac1596`

Presentations

Contributed Presentations

Mami Deka, Shashi M. Kanbur, Sukanta Deb, Susmita Das, 2023. A Study of Stellar Photosphere – Hydrogen Ionization Front Interaction in δ Scuti Stars. Oral presentation: International Astronomical Union (IAU) Symposium 376 "At the cross-roads of astrophysics and cosmology: Period–luminosity relations in the 2020s", Konkoly Observatiry, Budapest, Hungary

Mami Deka, Shashi M. Kanbur, Sukanta Deb, 2023. The HIF-stellar photosphere interaction theory: δ Scuti Stars. Poster: 41st meeting of The Astronomical Society of India,Indian Institute of Technology, Indore, 1-5 March, 2023

Skills

Programming	Python (SciPy, NumPy, AstroPy, Matplotlib, Pandas), IDL, Bash, R, FORTRAN
Other tools	MESA, Phoebe, IRAF, VOSA (SED fitting), DS9, HPC cluster, Machine learning, LATEX, MS-Office.
Data handling	OGLE, Gaia, TESS, Kepler Data etc.
Statistical techniques	MCMC, Bayesian analysis, F-test
Languages	Assamese, English, Hindi

Mentoring

2022 **Liza Devi**, MSc project (Current position: PhD student, Tezpur University) *Cotton University*

2022 **Snigdha Sarmah**, MSc project (Current position: PhD student, Tezpur University) *Cotton University*

2023 **Anurag Baruah**, MSc project *Cotton University*

References

Dr. Sukanta Deb
(PhD advisor)
Department of Physics
Cotton University
Guwahati-781001, India
`sukanto.deb@gmail.com`

Prof. Shashi M. Kanbur
(External Collaborator)
Department of Physics
SUNY Oswego
Oswego, NY 13126, USA
`shashi.kanbur@oswego.edu`