ALEENA BABY

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EDUCATION

Doctoral researcher, University of Cologne, Germany *2019 - 2022*

M.Sc. Physics, The Gandhigram Rural Institute- Deemed to be University (GRI-DU), India *2015 - 2017*

B.Sc. Physics(minor in Computer Science), WMO Arts and Science College, University of Calicut, India *2012 - 2015*

TECHNICAL SKILLS

Programming: Fortran, Python, C, HTML
Software & Tools: AIPS, GILDAS

DEEP INTERESTS

Research: Molecular clouds, Pulsars, and AGN
Creative & others : Short stories, Poems, Public speaking, Acting, Public outreach, and Teaching

WORK EXPERIENCE

Teaching Assistant, Physics Institute I, University of Cologne *April 2020 - June 2020*

- Assisted PD. Dr. Volker Ossenkopf- Okada in the course Physics of the ISM
- Created and evaluated exercises for the course

Assistant Professor and Head, Department of Physics, Alphonsa Arts and Science College *June 2018 - August 2018*

- Taught Electronics, Thermodynamics, Optics, and Astronomy for Bachelor students
- Handled lab sessions for Bachelor students

Assistant Professor, Department of Physics, SNDP Yogam arts and Science College *February 2018 - May 2018*

- Taught Python Programming, Waves, and Oscillations for Bachelors
- Taught Advanced Quantum Mechanics for Masters students
- Handled lab sessions for students

PROJECTS

Current projects

1. **Diffusion- advection effects in Photo-dissociated regions using KOSMA-Tau PDR model**
   - Created a model to explain the Diffusion-advection effect on the Photo-dissociation regions
   - Currently testing the model results with observations
   - *Guide : PD. Dr. Volker Ossenkopf- Okada, University of Cologne, Germany*
2. **Testing of Time-dependent PDR model using KOSMA-Tau PDR model**
   - Testing various time-dependent models implemented in the KOSMA-Tau PDR model
   - Analyze the results from the models to understand the chemistry and physics of the molecular clouds
   - *Guide : PD. Dr. Volker Ossenkopf- Okada, University of Cologne, Germany*

Completed projects

1. **Distribution of Pulsars in the Galaxy**
   - Created a model to explain the distribution of Pulsars in the Galaxy using object-oriented Python
   - *Guide: Dr. Avinash Deshpande, Professor, Astronomy and Astrophysics Division, RRI*

2. **Imaging of three 3C sources (Master's Thesis)**
   - Three AGNs 3C219, 3C403, and 3C433 were imaged using AIPS programming Language from the VLA data to understand the impact of the intergalactic medium.
   - *Guide: Dr. M.Sivaraman, Head of the Department, Department of Physics, GRI- DU*
3. **Active Galactic Nuclei: The Central Engine**
   - Created a theoretical model of AGN and an orientation-based unification scheme. Further, to understand the impact of the intergalactic medium on the emitted jets, AGN 3C219 was imaged using AIPS.
   - *Guide: Dr. Dharam Vir Lal, Associate Professor, National Centre for Radio Astrophysics (NCRA-TIFR), India*
4. **A Theoretical Study on Cosmic Microwave Background Radiation**
   - Focused on the literature review to understand how our Universe morphed from a coherently smooth Hubble-patch within a vast landscape into the intricate evolving complexity of the cosmic web.
   - *Guide: T. Najumunnisa, Assistant Professor, Department of Physics, WMO Arts and Science College, India*

SUPERVISION OF STUDENTS

Co-supervised Ms. Suharika P, Postgraduate Department of Physics, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India on her Master's thesis titled "Analysing the astrophysical parameters of the star clusters 2682 and NGC 45890 using Gaia Early Data Release-3".

CONFERENCES, WORKSHOPS AND PRESENTATIONS

- Poster presentation (selected): Diffusion-advection effects on the photo-dissociated regions at "The Physics and Chemistry of the Interstellar Medium" (PCMI), France 2022
- Poster presentation: Diffusion-advection effects on the photo-dissociated regions at The 7th Chile-Cologne-Bonn-Symposium Physics and Chemistry of Star Formation-The Dynamical ISM Across Time and Spatial Scales, Chile
- Presented a poster on Diffusion effects in Molecular clouds at ISM2021 virtual conference
- Participated in the 3-day workshop on Scientific Writing in Astrophysics by Dr. Dorottya Szécsi, Assistant professor, Nicolaus Copernicus University (Toruń, Poland)
- Participated in the Scientific Integrity course organised by University of Cologne
- Invited talk at the Post graduate Department of Physics, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, India on the topic Photo-dissociation regions: A modelling approach
- Presented at Annual SFB retreat 2020 on the topic Dynamical effects in KOSMA-τ PDR model

AWARDS

- Selected for the International Female Scholars Mentoring Program, organised by University of Cologne | 2022
- Selected for IRAM 30 m Summer school, IRAM, Granada, Spain | 2019
- Awarded the Visiting Student Program (VSP) Scholarship, Raman Research Institute (RRI), India | 2018
- Awarded the Summer Training Student Program(STP) scholarship, NCRA-TIFR, India | 2016
- Awarded the Winter School Studentship, Indian Institute of Astrophysics (IIA), India | 2015

PUBLIC OUTREACH

- Co-founder of Astronomy on Tap Cologne chapter, which help researchers to explain their research to the public. Organised awareness programs about the Solar Eclipse observations.

OTHER ACTIVITIES AND ACHIEVEMENTS

- Motivational speaker and career coach at Sheen International. I help to guide students (especially girls) from rural parts of India to pursue their career and land in a job
- Selected as the **Youth icon** by the Sheen International
- Second speaker in the Student council 2020-21 at University of Cologne