Indian Institute of Technology Indore,
Indore, Madhya Pradesh- 453552, India
phd2101121008@iiti.ac.in | palsamitkumar@gmail.com
Linkedin : https://www.linkedin.com/in/samit-pal-8514ba220
Gitlab : https://gitlab.com/samit-pal
+91-9851055523

# Samit Kumar Pal

DST INSPIRE Research Fellow, IIT Indore

## Education

**Indian Institute of Technology Indore**, Madhya Pradesh, India
*PhD, Astronomy & Cosmology* *Aug' 2021 - Present*
**CGPA:8.6/10**
**Supervisor**: Prof. Abhirup Datta
**Thesis Title:** *Precision Radio Cosmology Observations - Requirements and Forecasts*

**Visva-Bharati University**,
West Bengal, India
*Master of Science*, Physics, *Aug'2018 - Sep'2020*
**CGPA: 8.06/10**

**Visva-Bharati University**,
West Bengal, India
*Bachelor of Science*, Physics, *Jul'2015 - Jun'2018*
**CGPA: 7.78/10**

## Objective

I aim to do research in radio astronomy and establish myself as a research scientist. I focus on developing an end-to-end simulation pipeline for synthetic observations with next-generation radio telescopes, including the observational challenges in precision cosmological observations from the ground. As part of this, I am also working on the HI image analysis with the help of this e2e pipeline. This analysis is crucial in inferring the history of reionization, a key event in the early universe that transformed it from a neutral to an ionized state.

## Research Interests

**Observational cosmology**: Epoch of Reionization - HI 21cm Cosmology – Simulation, Modeling, Observations, and Data Analysis

**Radio Astronomy**: Calibration Effects, and Imaging in Radio Interferometry

## Masters' Thesis/ Research Project

**Simulation and Design low voltage DC-DC Converter**
*Supervisor : Prof.Tapas Kumar Kundu, Visva- Bharati University, West Bengal- 731235*

It is an experimental work in the field of Electronic submitted as a Dissertation for M.Sc(Physics) under Prof. Tapas Kumar Kundu, Visva-Bharati University. I gained knowledge about 'Simulation' and 'Power electronics'.

## Technical Skills

**Programming Languages**: C, C++, Python, HTML, CGI
**Analytical Skills**: LaTeX, MS-Office, LibreOffice
**Simulation Softwares**: SIMetrix /SIMPLIS, OSKAR, CASA
**Version control**: Gitlab
**Scientific Packages**: Wsclean, KillMS, DDFacet, Quartical, 21cmFAST, Aegean
**Operating System**: Linux (Ubuntu, CentOS), Windows, iPadOS

## Awards & Achievements

- Secured an **All-India-Rank of 322** in GATE 2021
- Secured an **All-India-Rank of 170** in JEST
- Awarded the **INSPIRE SCHOLARSHIP for HIGHER EDUCATION (2015)**
- Awarded the **INSPIRE FELLOWSHIP (2020)**

- Nominated for PRIME MINISTER'S RESEARCH FELLOWS (2022)

## Participation & Outreach

- Participated in SKA Data Challenge 3 (SDC3) as a member of the **Akashganga** team for SDC3a and the **Historian** team for SDC3b.
- Volunteered at the URSI Regional Conference on Radio Science, 2022, hosted by IIT Indore.
- Volunteered at the Astronomical Society of India (ASI) Meeting, 2023, hosted by IIT Indore.
- Teaching Assistant at RADIOCOSCON School, ICTS Bengaluru, April 2025

## Publication

- **S. K. Pal** et al. (2025), "Ionospheric effect on the synthetic Epoch of Reionization observations with the SKA1-Low," *JCAP*, 10.1088/1475-7516/2025/02/058.
- S. Dasgupta and **S. K. Pal** (2023), "Interpreting the HI 21-cm cosmology maps through Largest Cluster Statistics – I: Impact of the synthetic SKA1-Low observations," *JCAP*, 10.1088/1475-7516/2023/05/014.
- **S. K. Pal** et al. (2025), "Interpreting the HI 21-cm cosmology maps through Largest Cluster Statistics. Part II: Impact of realistic foreground and telescopic noise on synthetic SKA1-Low observations," *arXiv preprint*, arXiv:2503.00919.
- T. Biswas, including **S.K.Pal**, et al. (2023), "Concept study of UV coverage of radio interferometry in space using small satellites," *IEEE*, CODEC2023-166.
- T. Biswas, including **S.K.Pal**, (under review), "Space VLBI: Exploring the potential of hybrid orbit configurations," *ASR*, 10.21203/rs.3.rs-6376021/v1.
- Bonaldi, A., including **S.K.Pal**, .., "Square Kilometre Array Science Data Challenge 3a: foreground removal for an EoR experiment", MNRAS, vol. 543, no. 2, OUP, pp. 1092–1119, 2025. doi:10.1093/mnras/staf1466.
- **S. K. Pal** et al. (in prep), "Impacts of extended radio sources on the synthetic Epoch of Reionization observation with SKA1-Low AA*."

## Conference & Workshop

- Presented a talk at the *Workshop on 21-cm Cosmology in the SKA Era*, ISI Kolkata, October 2022.
- Presented a poster at the *5th URSI-RCRS Conference*, IIT Indore, December 2022.
- Presented a lightning talk and poster at the *Frontiers in Cosmology Conference*, RRI, Bengaluru, February 2023.
- Presented a poster at the *Astronomical Society of India (ASI) Conference*, IIT Indore, March 2023.
- Presented a talk at the *Advanced 21-cm Cosmology School and Workshop*, NISER Bhubaneswar, December 2023.
- Presented a poster at the *NSSS Conference*, Goa University, February 2024.
- Presented a talk at the *SKA CD/EoR ST Meeting*, Tsinghua University, China, July 2024.
- Presented a talk at the *21-cm Cosmology Workshop*, Hangzhou, China, July 2024.
- Presented a lightning talk and poster at the *7th Global 21-cm Workshop 2024*, RRI, Bengaluru, October 2024.
- Presented a talk at the *Workshop on 21-cm Cosmology*, IITM Chennai, December 2024.
- Presented a talk at *Radio Cosmology and Continuum Observations in the SKA Era: A Synergic View*, ICTS Bengaluru, April 2025.
- Presented a talk at *Scuola Normale Superiore (SNS)*, Pisa, Italy, June 2025.

- Presented a lightning talk and poster at the *SKAO General Science Meeting, A new era in astrophysics*, Görlitz, Germany, June 2025.
- Presented a talk at *Institute for Fundamental Physics of the Universe (IFPU)*, Trieste, Italy, July 2025.
- Participated in the *SKA Regional Centre Training Event (SRC)*, 2022.
- Participated in the *18th Synthesis Imaging Workshop*, 2022.
- Participated in the *NSM Astrophysics GPU Bootcamp*, 2022.

## Teaching Assistance

- **AA 201: Introduction to Astronomy** *Autumn 2022, IIT Indore*
- **AA 474N / 674N: Radio Astronomy** *Spring 2023, IIT Indore*
- **AA 411 / 611: Advanced Optics** *Autumn 2023, IIT Indore*

## Language

**Bengali (Mother tongue), English, Hindi**

## Reference


❖ **Prof. Abhirup Datta** ; **Email** :abhirup.datta@iiti.ac.in
**DAASE, IIT INDORE, MP - 453552, INDIA**
**Webpage:** https://sites.google.com/iiti.ac.in/abhirupdatta/

❖ **Dr. Suman Majumdar** ; **Email** :suman.majumdar@iiti.ac.in
**DAASE, IIT INDORE, MP - 453552, INDIA**
**Webpage:** http://people.iiti.ac.in/~sumanm/