

Srikrishna Sekhar

ASSISTANT SCIENTIST

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Experience

Assistant Scientist

Socorro, USA

NATIONAL RADIO ASTRONOMY OBSERVATORY

2023 - Present

- Scientific development and maintenance of domain specific code (imaging & flagging)
- Algorithm research and development

IDIA-NRAO Postdoctoral Fellow

Cape Town, South Africa

INSTITUTE FOR DATA INTENSIVE ASTRONOMY

2020 - 2023

- Lead data processing effort for the MIGHTEE-Pol survey
- Develop algorithms to model full Stokes primary beams
- Lead developer of IDIA Calibration Pipeline

Postdoctoral Fellow

Cape Town, South Africa

INSTITUTE FOR DATA INTENSIVE ASTRONOMY

2018 - 2020

- Develop full Stokes calibration pipeline
- Develop algorithms to model full Stokes primary beams
- Debug MeerKAT L-Band polarization for MIGHTEE-Pol

Education

Integrated PhD Physics

Pune, India

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2011 - 2018

- Developed novel algorithms to flag radio frequency interference (RFI) from interferometric datasets
- Studied the spectral index evolution of relic diffuse emission from radio lobes.

B.Sc Physics

Chennai, India

MADRAS CHRISTIAN COLLEGE

2008-2011

Teaching and Supervision

I have taught the following courses :

- Fall 2022** Astronomical Techniques
- Fall 2019** Astronomical Techniques
- 2018 - 2021** Data Science for Astronomy (Guest lecturer)

I have been a teaching assistant for the following courses :

- Fall 2016 - 2017** History of Science, Technology, and Medicine
- Spring 2017** Critical Reading and Communication
- Spring 2015** Introduction to Astronomy and Astrophysics
- Fall 2014** Introduction to Classical Mechanics
- Spring 2014** Undergraduate Physics Laboratory
- Fall 2013** Introduction to Astronomy and Astrophysics

I am co-advisor to the following students :

Lennart Heino **Doctoral Candidate**, Institute for Data Intensive Astronomy, *Cape Town*
Boikhutso Mabala **Graduate Student**, Institute for Data Intensive Astronomy, *Cape Town*

Research Interests

Imaging and calibration algorithms, polarimetry, deep field polarization, RFI mitigation and flagging algorithms, restarting AGN, galaxy clusters

Talks

Jan 2025 **National Radio Science Meeting (NRSM)**, Boulder, USA
Aug 2024 **International Astronomical Union (IAU) General Assembly (talk + poster)**, Cape Town, South Africa
May 2024 **Spectro-Spatial Modeling of Interferometric Data**, Charlottesville, USA
Jan 2024 **National Radio Science Meeting (NRSM)**, Boulder, USA
Nov 2023 **Astronomical Data Analysis and Software Systems (ADASS) XXXIII**, Tuscon, USA
Aug 2021 **URSI General Assembly (virtual)**, Rome, Italy
Nov 2020 **South African Radio Astronomy Observatory (SARAO) Bursary Conference**, Durban, South Africa
Nov 2019 **New Mexico Symposium (virtual)**, Socorro, USA
June 2019 **superMIGHTEE Conference**, Kruger Park, South Africa
May 2019 **SKA Pathfinders Radio Continuum Surveys (SPARCS)**, Lisbon, Portugal
March 2019 **URSI Asia Pacific Radio Science Conference**, New Delhi, India
Nov 2016 **SKA Pathfinders Radio Continuum Surveys (SPARCS)**, Goa, India

Public Outreach

2023 - 2025 **VLA Open Day**, Socorro, USA
2019 **Cape Centre Astronomical Society**, Cape Town, USA
2015 **Access Intensive Camp**, Mumbai, India

Telescope Time

I have been awarded over > 800 hours of time across various telescopes such as MeerKAT, (u)GMRT, and JVLA both as PI and as a part of collaborative efforts. As PI/Technical Lead, I have been allocated ~ 100 hours on GMRT and ~ 40 hours on MeerKAT.

Programming

Programming Python, C++, C, javascript, R
Scripting awk, sed, bash

Selected Publications

Full list available upon request

1. **S. Sekhar**. “Scientific Computing at Scale: How do we Approach a Petabyte Scale Problem?” 2025 United States National Committee of URSI National Radio Science Meeting (USNC-URSI NRSM), Boulder, CO, USA, 2025, pp. 284-284
2. Taylor, A. R., **S. Sekhar**, L. Heino, A. M. M. Scaife, J. Stil, M. Bowles, M. Jarvis, I. Heywood, and Jordan D. Collier. “MIGHTEE polarization early science fields: the deep polarized sky.” *Monthly Notices of the Royal Astronomical Society* 528, no. 2 (2024): 2511-2522.
3. **Sekhar, Srikrishna**, Preshanth Jagannathan, Brian Kirk, Sanjay Bhatnagar, and Russ Taylor. “Direction-dependent Corrections in Polarimetric Radio Imaging. III. A-to-Z Solver—Modeling the Full Jones Antenna Aperture Illumination Pattern.” *The Astronomical Journal* 163, no. 2 (2022): 87.
4. S. Bhatnagar, P. Jagannathan, **S. Sekhar**, B. M. Kirk, C. Hull, P. Cortez, S. Kameno, E. Fomolant, T. Hunter, and C. Brogan. “ALMA Study Project Report: Full-Mueller Mosaic Imaging With ALMA.” (2021).
5. **Sekhar, Srikrishna**, Preshanth Jagannathan, Brian Kirk, Sanjay Bhatnagar, and Russ Taylor. “Building a model for antenna aperture illumination pattern.” (2019).
6. **Sekhar, S.** and Athreya, R. Two procedures to flag radio frequency interference in the uv plane. *The Astronomical Journal* 156, 9 (2018).