Siddharth Savyasachi Malu, PhD

Signal Processing & RF Instrumentation Expert, Astrophysicist, Machine Learning Enthusiast

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Certifications

Machine Learning (Ng)
Neural Networks & Deep Learnin (Ng)
Intro. to AI, ML, DL
Enrolled in: Deep Learning & Tensorflow in Practice Specializations

Technical Skills

Signal Processing
Radio Frequency Instrumentation
Astrophysics

Research

OS & Software

GNU/Linux/Unix
MacOS
Python & R
Fortran & IDLWindows

Objective Leading research and development in design, execution and interpretation of signal processing / RF instrumentation / statistical learning schemes.

Professional Experience

Summary Application of skills and knowledge in astro/physics and mathematics to practical problems – signal processing, RF experiments, radio imaging and data analysis. Experience with academic policy and decision-making. Conception, design, construction and testing of novel instruments in radio frequency Astrophysics.

03/15 - Now **Associate Professor** — IIT Indore
Building radio telescopes that lead to technology development

03/12 - 03/15 **Assistant Professor** — IIT Indore

11/11 - 03/12 **Chief Research Officer** — Redwood Associates
Training Head, Specialized Statistical Training

12/07 - 11/11 **Postdoctoral Fellow** — Raman Research Institute & IUCAA
Galaxy Cluster mergers at high frequencies, Sunyaev-Zeldovich Effect at 18 GHz, Galaxy Cluster merger dynamics

01/03 - 09/07 **Research Assistant, PhD candidate** — UW Madison
Data Analysis, Microwave Instrumentation & Instrument Optimization

08/00 - 12/02 **Teaching Assistant** — U. of Chicago

08/97 - 03/08 **Junior Research Assistant** — St. Stephen's College
DST project on Mathematics in the Modern World

Core Competencies & Impact

2012 - Now **Development & Research** — IIT Indore & UW Madison
- 4-element Radio Interferometer, assembled & demonstrated at IIT Indore
- Development of a radio astronomy program to reinvigorate RF instrumentation in India
- Development of program for Galaxy Cluster characterization
- First Discovery of non-thermal SZ effect

2013 - 2014 **Head, Curriculum Overhaul** — IIT Indore
- Policy formation on curriculum overhaul for IIT Indore

2011 - Now **Mentoring & Teaching** — IIT Indore, Redwood Associates
- Providing a practical and basic engineering training to youngsters, using astronomy as a context

1997 - Now **New Approaches & Originality in Research** — Delhi, UW Madison, RRI
- Discovery of **sub-band splitting** in Quasi-optical systems
- Gibbs' sampling for CMB interferometry
- Discovery of systematic harmonic-inducing loadings on Indian Drums

2003 - Now **Service, Teamwork & Collaboration** — UW Madison, IIT Indore
- Formed & led Astrophysics Research Group at IIT Indore, which led to formation of the Discipline of Astronomy, Astrophysics & Space Engineering
- Able to build and sustain collaborations throughout career
- Experience with policy and decision-making as Member, Board of Governers, IIT Indore

Personal Skills

Places Lived

India (Patna, Delhi, Pune, Bengaluru, Indore)
USA (Chicago IL, Madison WI)
UK (Oxford)
Australia (Narrabri, Sydney)
Italy (Milano)

Languages

English ★★★★★
Hindi ★★★★★

Others

Literature
Musings of a Lost Soul, April 2020, ISBN-13: 979-8635685150
George Series Prize for *Best poem by an Oxford student*, 1999
Editorial Board, Hindi section, *The Stephanian*, 1996-1997
Music
Tabla, Sitar & vocal Indian Classical Music

Grants, Honours & Awards

07/2019 **Research Grant** — Council of Scientific & Industrial Research, Govt. of India
For investigating the Sunyaev-Zeldovich Effect in Galaxy Clusters
As Principal Investigator — *INR 11,50,000*

05/2019 **SPARC Travel & Research Grant** — UK-India Education Research Initiative
For conducting a survey of 5 GHz polarized CMB foregrounds
As Co-Investigator — *INR 70,00,000*

03/2017 **Research Grant for Instrumentation** — DST-SERB, Govt. of India
For development of a 4-element interferometer at IIT Indore
As Principal Investigator — *INR 83,77,000*

07/2013 **Best Teacher Award** — IIT Indore
For first-year Electrodynamics course

05/2011 **American Physical Society Travel Grant** — APS
For research with Prof. Peter Timbie (UW–Madison) on instrumentation

2007 **Jansky Award** — UW Madison
For *Distinguished Achievement in Astrophysics*

2006 **USA National Academy of Sciences Grant-In-Aid of Research** — *Through Sigma-Xi*
For mm-wave research at UW Madison

1998 - 2000 **Radhakrishnan-British Chevening Fellowship** — University of Oxford
UK government fellowship for M. Physics at the University of Oxford

1998 **Kumari L.A. Meera Memorial Award** — St. Stephen's College, Delhi University
For *Excellence in Physics*

Education

2003 - 2007 **Ph.D. in Physics (Astrophysics)** — University of Wisconsin - Madison

1998 - 2000 **M. Physics** — University of Oxford
UK Radhakrishnan-Chevening Fellowship

1995 - 1998 **B.Sc. (Hons.) Physics** — St. Stephen's College, Delhi University
Three Science Meritorious Awards from Delhi University

Publications, Instruments & Observations

18 papers in refereed journals
One radio interferometer assembled and tested successfully March 2020
Hands-on experience at 1.4, 5, 10 and 110 GHz radio frequencies
500 hours of successful radio observations on ATCA, JVLA, GMRT, Parkes

References

Prof. Peter Timbie, Department of Physics
University of Wisconsin-Madison, Madison WI 53705
email: pttimbie@wisc.edu

Other references available upon request.