

# Siddharth Savyasachi Malu, PhD

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

## Contact

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## Certifications

**Machine Learning (Ng)**  
**Neural Networks & Deep Learning (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 & IDL/Windows

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

## Professional Experience

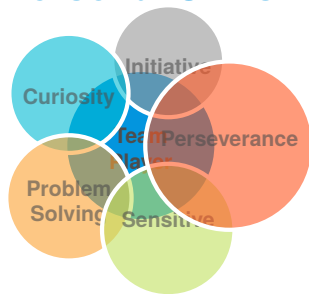
**Summary** Application of skills and knowledge in astro/physics and mathematics to practical problems – signal processing, RF experiments, radio imaging and data analysis. Experience with academic policy and decision-making. Conception, design, construction and testing of novel instruments in radio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