

Abhirup Datta

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EDUCATION

2010 PhD in Physics (expected August 2010)

- **Thesis:** *Searching for Cosmic Reionization with the HI 21cm Signal*
- **Advisor:** Dr. C.L. Carilli & Dr. S. Bhatnagar (NRAO), Dr. J.E. Eilek (NMT)

2004 MSc in Physics from the University of Pune at Pune, India.

- **Thesis:** *Radio Holography of GMRT Dishes.*
- **Advisor:** Prof. Rajaram Nityananda (NCRA-TIFR, India)

2002 BSc in Physics (Hons) from the University of Calcutta at Calcutta, India.

RESEARCH INTERESTS

Study of early universe through HI 21cm emission (Epoch Of Reionization), HI 21cm absorption at high redshifts, Aperture synthesis calibration and imaging techniques, Low frequency radio interferometric calibration and ionospheric corruption.

RESEARCH EXPERIENCE

2009-2010 Pre-Doctoral Fellow at National Radio Astronomy Observatory, Socorro, NM
February, 2009 - current

Projects :

- *Simulations on Epoch of Reionization (PhD Thesis)*
- *Search for HI absorption towards $z \sim 5$ radio loud objects with GMRT, India; P.I.: A. Datta (PhD Thesis)*

2007-2008 Pre-Doctoral Fellowship under Dr. Chris Carilli, NRAO, Socorro
on the grant from Alexander von Humboldt Foundation (Max Planck Forschungspreise 2005)
January, 2007 - January, 2009

Projects :

- *VLA-COSMOS project, P.I.: Dr. Eva Schinnerer (MPIA, Heidelberg, Germany)*
- *Simulations on Epoch of Reionization (PhD Thesis)*
- *PAPER project, P.I.: Dr. D.C. Backer (UC, Berkeley, USA)*
- *Search for 2p-2s hyperfine transition with GBT, P.I.: Dr. C.L. Carilli (NRAO, USA)*

2005, 2006 Summer Studentship : with Dr. S. Bhatnagar (NRAO), Dr. J.E. Eilek (NMT), National Radio Astronomy Observatory, Socorro, NM, May-August, 2006
Los Alamos National Laboratory, NM, May-August, 2005

Project :

- *Studying Ionospheric effect in low frequency radio interferometric observations*

2002-2004 MSc Research : under Prof. Rajaram Nityananda & Prof. S. Ananthakrishnan
Giant Meterwave Radio Telescope (GMRT), NCRA-TIFR, Pune, India

Projects :

- *Radio Holography of GMRT dishes (MSc Thesis)*
- *Simulation and Design of an economic RadioHeliograph.*

Research Involvement in selected other projects :

- **Measure the Magnetic fields in dense molecular clouds with Zeeman splitting observations in CCS, CN, SO molecular transitions :** Submitted a Pilot project (36 hrs) at EVLA [N. Roy (NRAO), A. Datta, et al.]
- **Radio detections of nova KT Eri :** First radio detection at 5 GHz (VLA) of this recently discovered Nova (Nov 25, 2009); [A. Datta, N.Roy, et al.]

TEACHING EXPERIENCE

- Taught Physics 122L (Fall- 2004, 2005, 2006 & Spring- 2005, 2006, 2010) at Physics Department, New Mexico Tech, Socorro, NM, USA.

TECHNICAL SKILLS

- Programming Languages :- FORTRAN, Python, Matlab, R.
- Expertise in Astronomical Image Processing System (AIPS) and Common Astronomy Software Applications (CASA) to analyze radio astronomical data. Working knowledge of Miriad.
- Good exposure to observing and functional aspects of GMRT and VLA.

FELLOWSHIPS, AWARDS and MEMBERSHIPS

- NRAO Pre-doctoral Fellowship/Graduate Internship, 2009
- Qualified in all India Level CSIR-UGC National Eligibility Test, 2003.
- Recipient of Certificate of Merit, National Scholarships Scheme, 1997 and 1999.
- Member of American Astronomical Society (AAS) since 2008
- Member of Society of Physics Students (SPS) since 2006

PUBLICATIONS

- **Datta, A.**, Bhatnagar, S. and Carilli, C.L., “Detection of Signals from Cosmic Reionization Using Radio Interferometric Signal Processing”, 2009, ApJ, 703, 2, 1851-1862
- **Datta, A.**, Carilli, C. L. et al., “Searching for Cosmic Reionization with the HI 21cm Signal” , 2010, AAS, 215, 325.02; BAAS, 41, 421
- **Datta, A.**, Bowman, J.D. and Carilli, C.L.,”Detection of Signals from Cosmic Reionization Using Radio Interferometric Signal - Power Spectral Analysis”, 2010, In Preparation.
- **Datta, A.**, Carilli, C.L. et al., “Search for HI 21cm absorption towards high redshift objects with GMRT” , 2010, In Preparation.
- Schinnerer, E., Sargent, M., **Datta, A.**, et al., “The VLA-COSMOS Survey. IV. Deep Data and Joint Catalog”, 2009, submitted to ApJ
- O’Brien, T.J. et al. including **Datta, A.**, “Radio detections of KT Eri”, 2010, Astronomer’s Telegram, # 2434
- Carilli, C.L. et al. including **Datta, A.**, “Star Formation Rates in Lyman Break Galaxies: Radio Stacking of LBGs in the COSMOS Field and the Sub- μ Jy Radio Source Population”, 2008, ApJ, 689, 2, 883-888
- Backer et al. including **Datta, A.**, “ PAPER: The Precision Array To Probe The Epoch Of Reionization”, 2007, AAS, 211, 133.02; BAAS, 39, 967
- Watts, C. et al. including **Datta, A.**, “ A Medium-Scale Traveling Ionospheric Disturbance Observed from the Ground and from Space”, 2008, AGU, SA33A-1623
- Dymond, K. et al. including **Datta, A.**, “ The Combined Radio Interferometry and COSMIC Experiment in Tomography (CRICKET) Campaign”, 2008, COSPAR, 775
- **Datta, A.** and Nityananda, R., “Radio Holography of GMRT Dishes”, 2004, NCRA Technical Report.

CONFERENCE PRESENTATIONS

- “Searching for Cosmic Reionization with the HI 21cm Signal” , Talk given at American Astronomical Society, Meeting 215, Washington, DC, USA
- “Effects of low frequency calibration errors on the detection of EOR”, Talk given at SKA Calibration and Imaging Workshop, March-April 2009, Socorro, USA
- “Detection Of Cosmic Stromgren Sphere”, Talk given at SKA Calibration and Imaging Workshop, April 2008, Perth, Australia.
- “VLA-COSMOS Survey - an update”, Poster presented at Deep Surveys of the Radio Universe with SKA Pathfinders Meeting, March-April 2008, Perth, Australia.
- “Investigating Ionospheric Corruptions in Imaging”, Talk at Radio Surveys: Science and Techniques Meeting, April, 2007, IAS, Los Alamos, USA

REFERENCES

List of people who will be sending letters of recommendation.

- **Dr. Christopher L. Carilli**, Scientist, National Radio Astronomy Observatory, Socorro, New Mexico, NM - 87801, USA Phone: +1 575-835-7306 (W) E-mail: ccarilli@nrao.edu
- **Dr. Sanjay Bhatnagar**, Associate Scientist, National Radio Astronomy Observatory, Socorro, New Mexico, NM - 87801, USA Phone: +1 575-835-7376 (W) E-mail: sbhatnag@nrao.edu
- **Dr. Jean E. Eilek**, Professor Emerita, Physics & Astrophysics, New Mexico Tech, Socorro, New Mexico, NM 87801, Phone: +1 575-8355433, +1 575-835-7393 (W) E-mail: jeilek@nrao.edu