

Shamibrata Chatterjee

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Research Interests:

- The Radio Transient Sky
- Compact Objects: Neutron Stars and Black Holes
- High Precision Astrometry: Neutron Star Proper Motions and Parallaxes

Education:

2003 Ph.D. (Astronomy), Cornell University
2000 M.S. (Astronomy), Cornell University
1996 B.Tech. (Electrical Engineering), Indian Institute of Technology, Madras

Research Experience:

2009 – Research Associate
Department of Astronomy and NAIC, Cornell University
2008 – 2009 Research Scientist *and* Queen Elizabeth II Fellow
CSIRO Australia Telescope National Facility
2006 – 2008 University Postdoctoral Research Fellow
School of Physics, The University of Sydney
2003 – 2006 Jansky Fellow
Harvard-Smithsonian Center for Astrophysics, Cambridge, MA *and*
National Radio Astronomy Observatory, Socorro, NM
1999 – 2003 Graduate Research Assistant
Department of Astronomy, Cornell University, Ithaca, NY
Pulsar Parallaxes, Bow Shock Nebulae and the Interstellar Medium
1998 – 1999 Junior Research Associate
National Radio Astronomy Observatory, Socorro, NM
Techniques for Sub-milliarcsecond Pulsar Astrometry
1995 – 1996 Undergraduate Thesis Research Project
Electrical Engineering, Indian Institute of Technology, Madras
Solid State Device Fabrication

Teaching Experience:

2008 – 2009 ATNF Summer Student Program mentor
Sarah Traine, The University of Melbourne
2008 Lecturer, Physics 1500, “Introduction to Astronomy”
The University of Sydney
2006 – 2007 Laboratory Supervisor, Physics 1001 and 1003, “Physics 1”
The University of Sydney
2007 Honours Thesis Co-supervisor
Christopher Hales, The University of Sydney

- 2006 Vacation Scholarship Program student mentor
Christopher Hales, The University of Sydney
- 2005 Co-supervisor, Visiting Graduate Student, Harvard University
Matthias Vigelius, University of Melbourne, Australia
PSR J2124–3358: A Bow Shock Nebula with an X-ray Tail
Poster at the AAS Meeting 207, Washington D.C., 2006
- 2004 Research Experience for Undergraduates: Summer Student Mentor
The Proper Motion of PSR B1951+32 and Its Interaction With CTB80
Poster by Benjamin Zeiger at the AAS Meeting 205, San Diego, 2005
- 1997 – 1998 Graduate Teaching Assistant
Department of Astronomy, Cornell University
- 1996 – 1997 Graduate Teaching Assistant
Applied and Engineering Physics, Cornell University
- 1996 Certificate of Merit, Graduate Teaching Development Program

Honors and Awards:

- 2008 Queen Elizabeth II Fellowship, Australian Research Council
- 2002 Cranson W. and Edna B. Shelley Award for Graduate Research in Astronomy
Department of Astronomy, Cornell University
- 2001 Eleanor Norton York Prize in Astronomy
Department of Astronomy, Cornell University
- 1996 Dr. Shankar Dayal Sharma, President of India Prize
for All Round Proficiency in Curricular and Extracurricular Activities
- 1996 Motorola Prize (Certificate of Academic Distinction)
Indian Institute of Technology, Madras
- 1996 Indian Institute of Technology Certificate of Merit
for Excellence in Cultural Activities and Organizational Abilities

Professional Activities and Organizations:

- 2003 – Peer Reviewer for the Astrophysical Journal and ApJ Letters
Peer Reviewer for Astronomy & Astrophysics
- 2003 – Member, American Astronomical Society
- 2008 – 2009 Member, Science Council, Murchison Widefield Array project
- 2006 – 2008 Peer Reviewer, NRAO *VLA*, *VLBA*, *GBT* proposals
- 2005 Guest Editor (with Cara Rakowski)
Advances in Space Research, Volume 35, Issue 6, 2005
“Young Neutron Stars and Supernova Remnants”
Proceedings of the 35th COSPAR Scientific Assembly, E1.4, Paris, July 2004
- 2004 – 2006 Science Education Division meetings, Center for Astrophysics
- 2004 Peer Reviewer, *Chandra X-ray Observatory Cycle 6*
- 2001 – 2003 Committee on Astronomy Computers & Facilities, Cornell University
- 1999 – 2003 Junior Member, American Astronomical Society
- 1997 – 2002 Focus For Teens: Summer workshops for high school students

Shamibrata Chatterjee: Publications

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Refereed Publications¹:

35. Kaplan, D. L., Esposito, P., **Chatterjee, S.**, Possenti, A., McLaughlin, M. A., Camilo, F., Chakrabarty, D., & Slane, P. O., “Upper Limits on X-ray Emission from Two Rotating Radio Transients”, *MNRAS*, accepted, 2009
34. Camilo, F., Ng, C.-Y., Gaensler, B. M., Ransom, S. M., **Chatterjee, S.**, Reynolds, J., & Sarkissian, J. “Out of the Frying Pan: A Young Pulsar with a Long Radio Trail Emerging from SNR G315.9–0.0” *ApJL*, **703**, L55–L58, 2009
33. Rea, N., McLaughlin, M. A., Gaensler, B. M., Slane, P. O., Stella, L., Reynolds, S. P., Burgay, M., Israel, G. L., Possenti, A., & **Chatterjee, S.**, “Discovery of Extended X-Ray Emission Around the Highly Magnetic RRAT J1819–1458”, *ApJL*, **703**, L41–L45, 2009
32. **Chatterjee, S.**, Brisken, W. F., Vlemmings, W. H. T., Goss, W. M., Lazio, T. J. W., Cordes, J. M., Thorsett, S. E., Fomalont, E. B., Lyne, A. G., & Kramer, M., “Precision Astrometry with the Very Long Baseline Array: Parallaxes and Proper Motions for 14 Pulsars”, *ApJ*, **698**, 250–265, 2009
31. Kaplan, D. L., **Chatterjee, S.**, Hales, C. A., Gaensler, B. M., & Slane, P. O., “Constraining the Proper Motions of Two Magnetars”, *AJ*, **137**, 354, 2009
30. Johnston, S. et al. (50 authors, including **Chatterjee, S.**), “Science with ASKAP. The Australian square-kilometre-array pathfinder”, *Experimental Astronomy*, **22**, 151–273, 2008
29. Gaensler, B. M., Madsen, G. J., **Chatterjee, S.**, & Mao, S. A. “The Vertical Structure of Warm Ionised Gas in the Milky Way”, *PASA*, **25**, 184, 2008
28. Murphy, T., Gaensler, B. M., & **Chatterjee, S.**, “A 20 Year Radio Light Curve for the Young Supernova Remnant G1.9+0.3”, *MNRAS*, **389**, L23, 2008
27. Champion, D. J. et al. (31 authors, including **Chatterjee, S.**), “An eccentric binary millisecond pulsar in the Galactic Plane”, *Science*, **320**, 1309, 2008
26. Kaplan, D. L., **Chatterjee, S.**, Gaensler, B. M., & Anderson, J., “A Precise Proper Motion for the Crab Pulsar, and the Difficulty of Testing Spin-Kick Alignment for Young Neutron Stars”, *ApJ*, **677**, 1201, 2008

¹Papers marked with * indicate student first-authors whose work I co-supervised

25. * Zeiger, B. R., Brisken, W. F., **Chatterjee, S.**, & Goss, W. M., “Proper Motions of PSRs B1757–24 and B1951+32: Implications for Ages and Associations”, *ApJ*, **674**, 271, 2008
24. Johnston, S. et al. (50 authors, including **Chatterjee, S.**), “Science with the Australian Square Kilometre Array Pathfinder”, *PASA*, **24**, 174, 2007
23. **Chatterjee, S.**, Gaensler, B. M., Melatos, A., Brisken, W. F., & Stappers, B. W., “Pulsed X-ray Emission from Pulsar A in the Double Pulsar System J0737–3039”, *ApJ*, **670**, 1301, 2007
22. McLaughlin, M. A., Rea, N., Gaensler, B. M., **Chatterjee, S.**, Camilo, F., Kramer, M., Lorimer, D. R., Lyne, A. G., Israel, G. L., & Possenti, A., “Discovery of Pulsations and a Possible Spectral Feature in the X-ray Emission from Rotating Radio Transient J1819–1458”, *ApJ*, **670**, 1307, 2007
21. Helfand, D. J., **Chatterjee, S.**, Brisken, W. F., Camilo, F., Reynolds, J., van Kerkwijk, M. H., Halpern, J. P., & Ransom, S. M., “VLBA measurement of the transverse velocity of the magnetar XTE J1810–197”, *ApJ*, **662**, 1198, 2007
20. Ng, C.-Y., Romani, R. W., Brisken, W. F., **Chatterjee, S.**, & Kramer, M., “The Origin and Motion of PSR J0538+2817 in S147”, *ApJ*, **654**, 487, 2007
19. * Vigelius, M., Melatos, A., **Chatterjee, S.**, Gaensler, B. M., & Ghavamian, P., “Three-dimensional hydrodynamic simulations of asymmetric pulsar wind bow shocks”, *MNRAS*, **374**, 793, 2007
18. * Blazek, J. A., Gaensler, B. M., **Chatterjee, S.**, van der Swaluw, E., Camilo, F., & Stappers, B. W., “The Duck Redux: An Improved Proper-Motion Upper Limit for the Pulsar B1757–24 near the Supernova Remnant G5.4–1.2”, *ApJ*, **652**, 1523, 2006
17. Gaensler, B. M., **Chatterjee, S.**, Slane, P. O., van der Swaluw, E., Camilo, F., & Hughes, J. P., “The X-ray Structure of the Pulsar Bow Shock G189.22+2.90 in the Supernova Remnant IC 443”, *ApJ*, **648**, 1037, 2006
16. Lorimer, D. R. et al. (36 authors, including **Chatterjee, S.**), “Arecibo Pulsar Survey Using ALFA. II. The Young, Highly Relativistic Binary Pulsar J1906+07”, *ApJ*, **640**, 428, 2006.
15. Reynolds, S. P., Borkowski, K. J., Gaensler, B. M., Rea, N., McLaughlin, M., Possenti, A., Israel, G., Burgay, M., Camilo, F., **Chatterjee, S.**, Kramer, M., Lyne, A. G. & Stairs, I., “Discovery of the X-ray Counterpart to the Rotating Radio Transient J1819–1458”, *ApJL*, **639**, L71, 2006.
14. Cordes, J. M. et al. (24 authors, including **Chatterjee, S.**), “Arecibo Pulsar Survey Using ALFA. I. Survey Strategy and First Discoveries”, *ApJ*, **637**, 446, 2006.
13. **Chatterjee, S.**, Goss, W. M., & Brisken, W. F., “Radio Emission from the Double Pulsar System J0737–3039 Revisited”, *ApJL*, **634**, L101, 2005.

12. **Chatterjee, S.**, Vlemmings, W. H. T., Brisken, W. F., Lazio, T. J. W., Cordes, J. M., Goss, W. M., Thorsett, S. E., Fomalont, E. B., Lyne, A. G., & Kramer, M., “Getting its Kicks: A VLBA Parallax for the Hyperfast Pulsar B1508+55”, *ApJL*, **630**, L61, 2005.
11. Moon, D.-S., Lee, J.-J., Eikenberry, S. S., Koo, B.-C., **Chatterjee, S.**, Kaplan, D. L., Hester, J. J., Cordes, J. M., Gallant, Y. A., & Koch-Miramond, L., “PSR B1951+32: A Bow Shock-confined X-Ray Nebula, a Synchrotron Knot, and an Optical Counterpart Candidate”, *ApJL*, **610**, L33, 2004.
10. Vlemmings, W. H. T., Cordes, J. M., & **Chatterjee, S.**, “Separated at Birth: The Origin of the Pulsars B2020+28 and B2021+51 in the Cygnus Superbubble”, *ApJ*, **610**, 402, 2004.
9. **Chatterjee, S.**, Cordes, J. M., Vlemmings, W. H. T., Arzoumanian, Z., Goss, W. M., & Lazio, T. J. W., “Pulsar Parallaxes at 5 GHz with the Very Long Baseline Array”, *ApJ*, **604**, 339, 2004.
8. **Chatterjee, S.** & Cordes, J. M., “Smashing the Guitar: An Evolving Neutron Star Bow Shock”, *ApJL*, **600**, L51, 2004.
7. Bhat, N. D. R., Cordes, J. M., & **Chatterjee, S.**, “A CLEAN-based Method for Deconvolving Interstellar Pulse Broadening from Radio Pulses”, *ApJ*, **584**, 782, 2003.
6. Rothstein, D. M., Eikenberry, S. S., **Chatterjee, S.**, Egami, E., Djorgovski, S. G., & Heindl, W. A., “The Infrared Counterpart of the Microquasar GRS1758–258”, *ApJL*, **580**, L61, 2002.
5. **Chatterjee, S.** & Cordes, J. M., “Bow Shocks from Neutron Stars: Scaling Laws and HST Observations of the Guitar Nebula”, *ApJ*, **575**, 408, 2002.
4. **Chatterjee, S.**, Cordes, J. M., Lazio, T. J. W., Goss, W. M., Fomalont, E. B., & Benson, J. M., “Parallax and Kinematics of PSR B0919+06 from VLBA Astrometry and Interstellar Scintillometry”, *ApJ*, **550**, 287, 2001.
3. Gaensler, B. M., Stappers, B. W., Frail, D. A., Moffett, D. A., Johnston, S., & **Chatterjee, S.**, “Limits on Radio Emission from Pulsar Wind Nebulae”, *MNRAS*, **318**, 58, 2000.
2. Fomalont, E. B., Goss, W. M., Beasley, A. J., & **Chatterjee, S.**, “Sub-Milliarc-second Precision of Pulsar Motions: Using In-Beam Calibrators with the VLBA”, *AJ*, **117**, 3025, 1999.
1. **Chatterjee, S.**, Bhat, K. N., & Rao, P. R. S., “The Effect of a Cap Layer on the Diffusion of Zinc from Doped Silica Films in Gallium Arsenide”, *Solid State Electronics*, **41**, 496, 1997.

VLBA Scientific Memos²:

- Walker, R. C. & **Chatterjee, S.**, “Ionospheric Corrections using GPS-based Models”, VLBA Scientific Memo 23, NRAO, 1999.
- **Chatterjee, S.**, “Recipes for low frequency VLBI Phase-Referencing and GPS Ionospheric Correction”, VLBA Scientific Memo 22, NRAO, 1999.
- **Chatterjee, S.**, “How Accurate is Phase Referencing at L-band? An Assessment”, VLBA Scientific Memo 18, NRAO, 1999.

Selected Colloquia and Conference Talks:

- 2009 Astronomy Colloquium, Cornell University
- 2009 Astronomy Colloquium, Mt. Stromlo Observatory, The Australian National University
- 2008 Astronomy Colloquium, CSIRO Australia Telescope National Facility.
- 2007 Invited Review on Neutron Star Astrometry, IAU Symposium 248, Shanghai, China
- 2007 Physics Colloquium, The University of Sydney, Australia.
- 2007 Astronomy Colloquium, Australia Telescope National Facility, Sydney, Australia.
- 2006 27th Texas Symposium on Relativistic Astrophysics, Melbourne, Australia
- 2006 36th COSPAR Scientific Assembly, Beijing, China
- 2006 Astronomy Colloquium, Northwestern University, Chicago, IL
- 2005 Astronomy Seminar, Rice University, Houston, TX
- 2005 “A Life with Stars”, Amsterdam, the Netherlands
- 2005 Radio & Geo-astronomy Seminar, Harvard-Smithsonian Center for Astrophysics
- 2005 Astronomy Lunch, Massachusetts Institute of Technology
- 2005 Jansky Fellows Symposium, NRAO, Charlottesville, Virginia
- 2004 35th COSPAR Scientific Assembly, Paris, France
- 2003 Astronomy Colloquium, NRAO, Green Bank, West Virginia
- 2003 Astronomy Colloquium, NRAO, Socorro, New Mexico
- 2002 NS/SNR Seminar, Harvard-Smithsonian Center for Astrophysics
- 2002 Astronomy Colloquium, Cornell University
- 2002 “Radio Pulsars: Crete 2002”, Greece
- 2002 TAPiR Group Seminar, California Institute of Technology
- 2002 Astronomy Colloquium, NAIC, Arecibo, Puerto Rico
- 2001 Radio Astronomy Seminar, University of California, Berkeley
- 2001 Astrophysics Seminar, Raman Research Institute, Bangalore, India
- 2001 Astronomy Seminar, National Center for Radio Astronomy, Pune, India
- 2001 URSI Meeting, University of Colorado, Boulder
- 1999 Gravity Group Seminar, Princeton University

²<http://www.aoc.nrao.edu/vlba/html/MEMOS/scimemos.html>