

# Shamibrata Chatterjee

Senior Research Associate

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## Research Interests

- Nanohertz Gravitational Waves and Pulsar Timing Arrays.
- The Radio Transient Sky; Fast Radio Bursts; Compact Objects: Neutron Stars.
- 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.

## Professional Experience

- 2015— Senior Research Associate  
Cornell Center for Astrophysics and Planetary Science.
- 2009 – 2014 Research Associate  
Department of Astronomy and CRSR, Cornell University.
- 2008 – 2009 Research Scientist *and* Queen Elizabeth II Fellow  
CSIRO Australia Telescope National Facility.
- 2006 – 2008 University Research Fellow  
School of Physics, The University of Sydney, Australia.
- 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.

## Selected Honors and Awards

- 2020 Breakthrough Prize in Fundamental Physics,  
Event Horizon Telescope Collaboration (shared, 347 members).
- 2008 Queen Elizabeth II Fellowship, Australian Research Council.
- 2003 Jansky Fellowship, National Radio Astronomy Observatory.
- 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 Indian Institute of Technology Certificate of Merit  
for Excellence in Cultural Activities and Organizational Abilities.
- 1996 Motorola Prize (Certificate of Academic Distinction),  
Indian Institute of Technology, Madras.

### Selected Professional Activities

- Chair, NANOGrav Collaboration Pulsar Search Working Group, 2019—
- Co-Chair, NANOGrav Collaboration Noise Budget Working Group, 2015 – 2019.
- Co-Chair, VLA Sky Survey Science Group, 2015—
- Scientific Advisory Council, Next-Generation Very Large Array, 2016—
- Proposal review, Arecibo Observatory, 2018—
- NRAO Users Committee, 2013 – 2017.
- NASA peer review, *Swift* Cycle 12, *Fermi* Cycle 8, *Chandra X-ray Observatory* Cycles 6, 14.
- NSF external review, NRAO-ALMA Program Plan Review, 2012.
- NSERC Canada external review, Discovery grants program, 2012.
- Science Council, Murchison Widefield Array project, 2008 – 2009.
- Proposal review, National Radio Astronomy Observatory, 2006 – 2008.
- Guest Editor, “Young Neutron Stars and Supernova Remnants”, *Advances in Space Research*, 2005.
- Peer review for *Nature*, *Astrophysical Journal*, *Astrophysical Journal Letters*, *Monthly Notices of the Royal Astronomical Society*, *Astronomy & Astrophysics*, ongoing.

### Selected Funded Grant Proposals

- Co-I, “Interstellar Turbulence Near the Heliospheric Boundary”  
2019, NASA Outer Heliosphere Guest Investigator Program, \$363,000.
- PI, “Radio Bursts and Gravity from Parsecs to Gigaparsecs”  
2017, NSF Astronomy and Astrophysics Research, \$586,000.
- PI, “Solving the Enigma of Fast Radio Burst 121102”  
2017, *Hubble Space Telescope* General Observer Program, \$22,000.
- PI, “A NANOGrav Study of Gravitational Wave Astronomy with the ngVLA”  
2016, National Radio Astronomy Observatory, \$25,000.
- PI, “Coordinated X-Ray and Radio Observations of the Repeating Fast Radio Burst 121102”  
2016, *Chandra* General Observer Program subaward, \$12,000.
- Senior Personnel, “The North American Nanohertz Observatory for Gravitational Waves”  
2013, NSF Physics Frontiers Center *and* NSF Mid-Scale Innovations Program, \$16M.
- PI, “Collaborative Research: Booming or Beaming? Sorting out the Dynamic Radio Universe”  
2009, NSF Astronomy and Astrophysics Research, \$269,000.
- PI, “Snap, Crackle, Pop: Opening the Window on the Variable Radio Universe”  
2008, Australian Research Council Discovery Project, AU\$ 876,000.

### Teaching Experience

- 2018, 2019    Astronomy 1199, “Are We Alone? Search for Life in the Universe”; Cornell University.
- 2017, 2018    Astronomy 2201, “History of the Universe”; Cornell University.
- 2014 – 2018    Astronomy 2299, “Search for Life in the Universe”; Cornell University.
- 2008            Physics 1500, “Introduction to Astronomy”; The University of Sydney.
- 2006 – 2007    Physics 1001 and 1003, “Physics 1”; The University of Sydney.

## Shamibrata Chatterjee: Twelve Selected High-Impact Publications

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**Current H-Index: 52**

(At least 52 refereed publications with 52 or more citations through May 2020.)

1. Ferdman, R. D., Freire, P. C. C., Perera, B. B. P., Pol, N., Camilo, F., **Chatterjee, S.**, Cordes, J. M., Crawford, F., Hessels, J. W. T., Kaspi, V. M., McLaughlin, M. A., Parent, E., Stairs, I. H., van Leeuwen, J., “Asymmetric mass ratios for bright double neutron-star mergers”, *Nature*, **583**, 211, 2020.
2. Cordes, J. M. and **Chatterjee, S.**, “Fast Radio Bursts: An Extragalactic Enigma”, *Annual Review of Astronomy and Astrophysics*, **57**, 417, 2019 ⇒ *Invited review of the field; 71 cites.*
3. Michilli, D., Seymour, A., Hessels, J. W. T., Spitler, L. G., Gajjar, V., Archibald, A. M., Bower, G. C., **Chatterjee, S.**, Cordes, J. M., et al. (34 authors), “An Extreme Magneto-Ionic Environment Associated with the Fast Radio Burst Source FRB 121102”, *Nature*, **553**, 182, 2018. ⇒ *142 cites.*
4. Tendulkar, S. P., Bassa, C. G., Cordes, J. M., Bower, G. C., Law, C. J., **Chatterjee, S.**, et al. (24 authors), “The Host Galaxy and Redshift of the Repeating Fast Radio Burst FRB 121102”, *ApJL*, **834**, L7, 2017. ⇒ *The first FRB host galaxy redshift; 315 cites.*
5. **Chatterjee, S.**, Law, C. J., Wharton, R. S., et al. (25 authors), “A Direct Localization of a Fast Radio Burst and its Host”, *Nature*, **541**, 58, 2017. ⇒ *The first FRB localization; 345 cites.*
6. Spitler, L. G., Scholz, P., Hessels, J. W. T., Bogdanov, S., Brazier, A., Camilo, F., **Chatterjee, S.**, Cordes, J. M., et al. (24 authors), “A Repeating Fast Radio Burst”, *Nature*, **531**, 202, 2016. ⇒ *At least some FRBs repeat; 406 cites.*
7. Ransom, S. M. et al. (21 authors, including **Chatterjee, S.**), “A Millisecond Pulsar in a Stellar Triple System” *Nature*, **505**, 520, 2014. ⇒ *A NS–WD–WD testbed for general relativity; 148 cites.*
8. Knispel, B. et al. (41 authors, including **Chatterjee, S.**), “Pulsar Discovery by Global Volunteer Computing”, *Science*, **329**, 1305, 2010. ⇒ *The first discovery from the Einstein@Home distributed volunteer computing project; 36 cites.*
9. **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 VLBA: Parallaxes and Proper Motions for 14 Pulsars”, *ApJ*, **698**, 250–265, 2009. ⇒ *Results from a large astrometry program with the Very Long Baseline Array; 103 cites.*
10. Champion, D. J. et al. (31 authors, including **Chatterjee, S.**), “An Eccentric Binary Millisecond Pulsar in the Galactic Plane”, *Science*, **320**, 1309, 2008. ⇒ *An unusual system discovered by the PALFA survey at Arecibo; 139 cites.*
11. **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. ⇒ *A neutron star velocity in excess of 1000 km/sec challenges theoretical models; 117 cites.*
12. **Chatterjee, S.** & Cordes, J. M., “Bow Shocks from Neutron Stars: Scaling Laws and HST Observations of the Guitar Nebula”, *ApJ*, **575**, 408, 2002. ⇒ *General scaling laws for bow shock nebulae; 83 cites.*