

# Duncan Ross Lorimer

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Duncan Lorimer is a British/American astrophysicist whose research interests include: compact stars; astrophysical source populations; Galactic and extragalactic transient radio sources; signal processing and instrumentation for radio astronomy; searches for extraterrestrial civilizations; observational tests of general relativity. His research to date has resulted in 188 publications with 19470 citations and an h-index of 70. In the last decade, as a faculty member in the Department of Physics and Astronomy at West Virginia University, he has been a principle investigator, co-investigator, or senior personnel on 24 external proposals which have brought in over 23 million dollars of research funding.

## Employment

### **Department of Physics and Astronomy, West Virginia University, Morgantown, USA**

2014 — present: Professor and Associate Department Chair

2010 — 2014: Associate Professor

2006 — 2010: Assistant Professor

### **National Radio Astronomy Observatory, USA**

2006 — present: Assistant Astronomer (adjunct position)

### **University of Manchester, Jodrell Bank Observatory, UK**

2001 — 2006: Royal Society University Research Fellow

### **National Aeronomy and Ionosphere Center, Arecibo Observatory, Puerto Rico**

1999 — 2001: Research Scientist

1998 — 1999: Cornell University Research Associate

### **Max Planck Institut für Radioastronomie, Bonn, Germany**

1997 — 1998: Max Planck Research Associate

1995 — 1997: European Pulsar Network Research Fellowship

### **University of Manchester, Department of Physics and Astronomy, UK**

1994 — 1995: Lecturer in Physics and Astronomy

## Education

### **University of Manchester, UK**

1991 — 1994: PhD, *The Galactic population of millisecond and normal pulsars*

### **University of Manchester, UK**

1990 — 1991: MSc, Radio Astronomy

### **University of Wales, Cardiff, UK**

1987 — 1990: BSc (Hons), Astrophysics

## Awards and Honours

Research Corporation for Scientific Advancement Scialog Fellow (2015–2016)

West Virginia University Eberly College Woodburn Professorship (2011–2013)

West Virginia University Foundation Outstanding Teacher Award (2010)

West Virginia University Eberly College Outstanding Teacher Award (2009)

Research Corporation for Scientific Advancement Cottrell Scholar (2009–2012)

Royal Society University Research Fellow (2001–2005)

Fellow of the Royal Astronomical Society (1997–present)

## Teaching experience

### Courses taught

Computational Astrophysics — WVU graduates (Fall 2013, 2015)  
Observational Astronomy — WVU undergraduates (Spring 2011)  
Relativity — WVU honors students (Fall 2009, 2011, Spring 2012, 2015, 2017)  
Galactic astronomy — WVU graduate (Spring 2009)  
General relativity — WVU undergraduates and graduates (Fall 2008, 2010, 2012, 2014, 2016)  
Radio astronomy — WVU graduates (Fall 2007, 2009, 2011, Spring 2014, 2016)  
Descriptive astronomy — WVU undergraduates (Fall 2006, Spring 2008, 2010)  
Explosions in space — WVU undergraduates (Spring 2012, 2014, 2015)  
Honors astronomy — WVU honors students (Fall 2006, 2007, 2008, 2010, 2013)  
Gravitational wave astronomy — Manchester undergraduates (Fall 2003, 2005)  
Extra-solar planets and the search for life — Manchester undergraduates (Fall 2001)  
Pulsar astronomy — University of Zielona Gora undergraduates (Spring 1998)  
Pulsar astronomy — Manchester postgraduates (Fall 1994)  
Waves and Thermal Physics — WVU undergraduates (Spring 2017)

### Laboratory experiments

Radio astronomy — Manchester undergraduates (1994–1995, 2001–2006)  
Introductory computing — Manchester undergraduates (1991–1992)  
Physical constant measurements — Manchester undergraduates (1990–1991)

### Recitation classes

First year physics — Manchester undergraduates (Fall 1994, Spring 1995)  
Pure mathematics — Manchester undergraduates (Fall 1993, Spring 1994)

### Graduate students supervised

Golnoosh Golpayegani — PhD (expected 2019)  
Akshaya Rane — PhD (2017)  
Kaustubh Rajwade — PhD (2017)  
Joseph Swiggum — PhD (2015; co-supervised with Maura McLaughlin)  
Jayanth Chennamangalam — PhD (2014)  
Andrew Seymour — PhD (2014)  
Mitchell Mickaliger — PhD (2013; co-supervised with Maura McLaughlin)  
Jason Boyles — PhD (2011; co-supervised with Maura McLaughlin)  
Josh Ridley — PhD (2010)  
David Champion — PhD (2005; co-supervised with Maura McLaughlin)  
Sarah Verbickas — MSc (1995)  
Stephen Curran — MSc (1994)

### Undergraduate students supervised

Ben Gregg — WVU undergraduate (Summer 2017)  
Emily Stiner — WVU undergraduate (Fall 2015–Spring 2017)  
Alex Hayes — WVU undergraduate (Fall 2015)  
Craig Tenney — WVU undergraduate (Summer 2011, 2013)  
Natasha McMann — WVU undergraduate (Summer 2013)  
April Liska — WVU undergraduate (Summer 2012, 2013)  
Adam Collins — WVU undergradyate (Summer 2011, 2012)  
Nathan Tehrani — WVU undergraduate (Summer 2011)

Suzannah Bailey — Syracuse undergraduate (Summer 2010)  
Adil Moghal — WVU Physics undergraduate (2008–2009)  
Marc Eimers — Green Bank REU (2008; co-supervised with Maura McLaughlin)  
Stanislav Edel — WVU Physics undergraduate (2007–present)  
Courtney Epstein — Green Bank REU (2007; co-supervised with Maura McLaughlin)  
David Narkevic — WVU Physics undergraduate (2006–present)  
Natasha Hurley-Walker — Manchester summer student (2004, 2005)  
Ruth Murray — Arecibo REU student (2000)  
James Sheekard — Arecibo REU student (1999)

## **Institutional activities**

Interim Physics Department Chair — WVU (2012)  
Faculty search committees — WVU (2008, 2010, 2012)  
Physics & Astronomy Merit Pay Committee — WVU (2007–2009)  
Physics & Astronomy Faculty Evaluation Committee — WVU (2010–present; 2014-2015 Chair)  
Physics & Astronomy Colloquium organizer — WVU (2013–present)  
Physics Department Newsletter committee — WVU (2008–2012)  
International Year of Astronomy outreach talk organizer — WVU (2008–2009)  
Astronomy club advisor — WVU (2008–2009)  
Electricity/Magnetism exam committee — WVU (2006–present)  
Public lecture organizer — Jodrell Bank Observatory (2002–2006)  
Seminar co-organizer — Arecibo Observatory (1998–2001)  
Journal club co-organizer — Arecibo Observatory (1998–2000)  
Journal club co-organizer — Max-Planck Institute (1996–1998)  
Journal club organizer — Jodrell Bank Observatory (1994–1995)

## **Research credentials**

### **Externally Funded Research at WVU (24 grants; \$23.3M)**

PI of “Summer salary award” (2007-2009), National Radio Astronomy Observatory \$25,984.  
Co-PI of “Towards a Center for Astrophysics at West Virginia University” (2007-2012) West Virginia EPSCoR Research Challenge Award, \$1,432,943.  
Co-PI of “The pulsar search collaboratory: a comprehensive project for students and teachers” (2008-2011) National Science Foundation, Division of Research on Learning in Formal and Informal Settings, \$877,335.  
PI of “PSR J1832+0029: A unique probe of pulsar emission physics” (2008) NASA proposal 09500898, \$28,884.  
PI of “PSR J1832+0029: A unique target for pulsar emission physics” (2009) NASA proposal 11500222, \$26,190.  
Sole PI of “Bursts, flickers and cosmic flashes: studying the transient radio sky” (2009-2012) Research Corporation for Scientific Advancement, Cottrell Scholar award, \$100,000.  
PI of “A new census of the Globular Cluster Pulsar population” (2009-2011) NSF-AAG \$152,096.  
PI of “PSR J1023+0038: Tracing the Accretion History of a Missing Link” (2009) NASA proposal 11400764, \$46,385.  
Co-PI of NASA proposal 11500788: “Crab Giant Pulses: A correlation study at radio and X-rays”, \$29,095.

PI of NASA proposal 12500248: “PSR J1832+0029: A unique target for pulsar emission physics”, \$22,674.

PI of NASA proposal 12400736: “Constraining the X-ray spectrum of a nearby unusual binary pulsar”, \$34,039.

Co-PI NSF PIRE program: “PIRE: International pulsar timing array for gravitational wave detection”. This is a 5-year multi institutional proposal for a total of \$6,548,073.

PI of “Pulsar research at the Arecibo Observatory: a celebration of five key contributors” (2011-2012), NSF Astronomy and Astrophysics Grants program: \$28,600.

Co-PI of “An all-sky radio survey for millisecond pulsars, exotic binary systems and transients” (2012-2015), NSF Astronomy and Astrophysics Grants Program: \$453,000.

Co-PI of Collaborative Research: Wide-Field L-band Focal Plane Array Beamformer for Pulsar, Diffuse Hydrogen, and Fast Transient Surveys on the GBT NSF Advanced Technologies and Instrumentation Program: \$570,000.

Co-PI of “The first X-ray observations of four exotic new millisecond pulsars”, NASA, \$15,852.

Co-PI of “STEM-ID: Developing STEM self-efficacy and science identities through participation in authentic astrophysics research in online and face-to-face environments” NSF, \$1,214,000.

PI of “X-ray burstarooos? XMM observations of bursting neutron stars”, NASA, \$46,244.

Senior personnel on “Waves of the Future: Capacity Building for the Rising Tide of STEM in West Virginia”, NSF-EPSCoR, \$9,668,382.

Senior personnel on “NANOGrav Physics Frontier Center”, NSF-PHYS, \$14,500,00.

PI of “Collaborative Research: Synergistic Study of Fast Radio Bursts and Pulsar Giant Pulse Emission”, NSF, \$58,247.

PI of “Fast Detection of Fast Radio Bursts with Arecibo and the GBT”, NSF, \$372,315.

PI of “Simultaneous Radio and Swift Observations of Fast Radio Bursts”, NASA, \$19,908.

Sole PI of “Simultaneous Radio and X-ray Observations of Fast Radio Bursts”, RCSA, \$50,000.

## **Community academic services**

Member of SOC for Timing Neutron Star conference (Rio de Janeiro 2009)

Co-organized workshop on Neutron Star Populations (Green Bank, WV 2007)

Publically available pulsar data reduction software <http://sigproc.sourceforge.net>

Publically available pulsar search software <http://psrpop.sourceforge.net>

Publically available pulse profile database <http://www.mpifr-bonn.mpg.de/div/pulsar/data>

Board member of Arecibo Science Advocacy Partnership (2007–present)

Member of scheduling committee for Green Bank Telescope (2006–present)

Member of SOC for Radio Pulsars conference (Crete 2003)

Proposal reviewer for the Arecibo telescope (2001–present)

Proposal reviewer for MERLIN national facility (2001–present)

Organized Arecibo Pulsar workshop (2000)

Proposal reviewer for the Green Bank Telescope (2000–2003)

Co-organized joint MPI-MPE workshop, Bonn (1997)

Organized first EPN workshop at Jodrell Bank (1995)

Reviewer for most major astrophysics journals (1994–present)

## **Professional affiliations**

Member of the American Physical Society (2016–present)

Member of the Royal Astronomical Society (1991–present)

## Recent presentations

I have delivered over 100 scientific talks on pulsar-related topics over the last fifteen years at major international conferences and during visits to scientific establishments.

*Fast Radio Transients* — Invited review talk at Kavli Meeting meeting, Chicago, December 2015.

*The Spin: Millisecond Pulsars and the NS Equation of State* — Invited review talk at Neutron Star Radius Meeting, McGill, Canada, June/July 2015.

*Pulsars, Flickers and Cosmic Flashes: The Transient Radio Universe* — ISTE C Distinguished Lecture, Colorado State University, May 2015.

## Synergistic activities

I am a firm believer of making research tools publically available. In 1995 I created a large database of pulsar data which has been used by astronomers from across the electromagnetic spectrum ever since (<http://www.mpifr-bonn.mpg.de/div/pulsar/data/archive.html>). My pulsar data analysis code has been in the public domain since 2001 (<http://sigproc.sourceforge.net>) and software to simulate pulsar populations has been available since 2006 (<http://psrpop.sourceforge.net>). Currently I maintain databases of Galactic millisecond pulsars (<http://astro.phys.wvu.edu/GalacticMSPs>) and Fast Radio Bursts (<http://astro.phys.wvu.edu/FRBs>).

## Public lectures

Fast Radio Bursts — Aspen Opera House (2017) <https://www.youtube.com/watch?v=4MW96nVhTA0>

Einstein's unfinished symphony: detecting gravitational waves with pulsars<sup>1</sup> — WVU (2011)

What's new in the pulsar world? — Carnegie Science Center, Pittsburgh PA (2010)

What's new in the pulsar world? — Blackwater Falls, WV (2010)

Matters of gravity — WVU International Year of Astronomy (2009)

Green Bank and Einstein — Green Bank, West Virginia (2009)

Einstein's relativity — WVU Astronomy Club (2008)

Pulsars: nature's finest clocks — Green Bank, West Virginia (2008)

A double pulsar system — West Lakes, England (2005)

Putting Einstein to the test — Leeds, England (2004)

Wenn sterne zussamenstossen — Bad Munstereiffel, Germany (1998)

Pulsare, Planeten und Prophezeiungen — Bad Munstereiffel, Germany (1997)

Die Wunderbare Welt der Pulsare — Bad Munstereiffel, Germany (1996)

## Handbook of Pulsar Astronomy

While at Jodrell Bank observatory, I co-authored *Handbook of Pulsar Astronomy* with colleague Michael Kramer (Lorimer & Kramer 2005) as part of the Cambridge Observing Handbooks for Research Astronomers series. Unlike existing monographs on pulsars, this book brings together the key observational techniques, background information and a review of the latest results, including the recent discovery of the double pulsar system, J0737–3039. Useful software tools, which can be used to analyze example data, are available on a website (<http://www.jb.man.ac.uk/~pulsar/handbook>) as well as various other utilities and catalogs. This book should be of great value not only to graduate students, and to researchers wishing to carry out and interpret a variety of radio pulsar observations. Michael and I are currently working on a second edition of the book.

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<sup>1</sup>Joint lecture given with Maura McLaughlin — see <http://www.youtube.com/watch?v=QVjqvCMu5m0>

**All refereed research papers (188 papers; 19470 citations; h-index: 70)**

- [1] Johnston, S., Lorimer, D. R., Harrison, P. A., Bailes, M., Lyne, A. G., Bell, J. F., Kaspi, V. M., Manchester, R. N., D'Amico, N., and Nicastro, L. *Discovery of a very bright, nearby binary millisecond pulsar*, 1993, *Nature*, **361**, 613.
- [2] Lorimer, D. R., Bailes, M., Dewey, R. J., and Harrison, P. A. *Pulsar Statistics - the Birthrate and Initial Spin Periods of Radio Pulsars*, 1993, *Monthly Notices of the Royal Astronomical Society*, **263**, 403.
- [3] Bailes, M., Harrison, P. A., Lorimer, D. R., Johnston, S., Lyne, A. G., Manchester, R. N., D'Amico, N., Nicastro, L., Tauris, T. M., and Robinson, C. *Discovery of three binary millisecond pulsars*, 1994, *The Astrophysical Journal*, **425**, L41.
- [4] Lyne, A. G. and Lorimer, D. R. *High birth velocities of radio pulsars*, 1994, *Nature*, **369**, 127.
- [5] Tauris, T. M., Nicastro, L., Johnston, S., Manchester, R. N., Bailes, M., Lyne, A. G., Glowacki, J., Lorimer, D. R., and D'Amico, N. *Discovery of PSR J0108-1431: The closest known neutron star?*, 1994, *The Astrophysical Journal*, **428**, L53.
- [6] Lorimer, D. R., Nicastro, L., Lyne, A. G., Bailes, M., Manchester, R. N., Johnston, S., Bell, J. F., D'Amico, N., and Harrison, P. A. *Four new millisecond pulsars in the galactic disk*, 1995, *The Astrophysical Journal*, **439**, 933.
- [7] Lorimer, D. R., Yates, J. A., Lyne, A. G., and Gould, D. M. *Multifrequency flux density measurements of 280 pulsars*, 1995, *Monthly Notices of the Royal Astronomical Society*, **273**, 411.
- [8] Nicastro, L., Lyne, A. G., Lorimer, D. R., Harrison, P. A., Bailes, M., and Skidmore, B. D. *PSR:J1012+5307 - a 5.26-millisecond Pulsar in a 14.5-hour Binary System*, 1995, *Monthly Notices of the Royal Astronomical Society*, **273**, L68.
- [9] Lorimer, D. R. *Pulsar statistics - II. The local low-mass binary pulsar population*, 1995, *Monthly Notices of the Royal Astronomical Society*, **274**, 300.
- [10] Lorimer, D. R., Lyne, A. G., and Anderson, B. *On the pulsar velocity-magnetic field correlation*, 1995, *Monthly Notices of the Royal Astronomical Society*, **275**, L16.
- [11] Lorimer, D. R., Lyne, A. G., Festin, L., and Nicastro, L. *Birth rate of millisecond pulsars*, 1995, *Nature*, **376**, 393.
- [12] Curran, S. J. and Lorimer, D. R. *Pulsar Statistics - Part Three - Neutron Star Binaries*, 1995, *Monthly Notices of the Royal Astronomical Society*, **276**, 347.
- [13] Manchester, R. N., Lyne, A. G., D'Amico, N., Bailes, M., Johnston, S., Lorimer, D. R., Harrison, P. A., Nicastro, L., and Bell, J. F. *The Parkes Southern Pulsar Survey. I. Observing and data analysis systems and initial results.*, 1996, *Monthly Notices of the Royal Astronomical Society*, **279**, 1235.
- [14] Stappers, B. W., Bailes, M., Lyne, A. G., Manchester, R. N., D'Amico, N., Tauris, T. M., Lorimer, D. R., Johnston, S., and Sandhu, J. S. *Probing the Eclipse Region of a Binary Millisecond Pulsar*, 1996, *The Astrophysical Journal*, **465**, L119.
- [15] van den Heuvel, E. P. J. and Lorimer, D. R. *On the galactic and cosmic merger rate of double neutron stars.*, 1996, *Monthly Notices of the Royal Astronomical Society*, **283**, L37.
- [16] Lorimer, D. R., Lyne, A. G., Bailes, M., Manchester, R. N., D'Amico, N., Stappers, B. W., Johnston, S., and Camilo, F. *Discovery of Four Binary Millisecond Pulsars*, 1996, *Monthly Notices of the Royal Astronomical Society*, **283**, 1383.

- [17] Bailes, M., Johnston, S., Bell, J. F., Lorimer, D. R., Stappers, B. W., Manchester, R. N., Lyne, A. G., Nicastro, L., D'Amico, N., and Gaensler, B. M. *Discovery of Four Isolated Millisecond Pulsars*, 1997, *The Astrophysical Journal*, **481**, 386.
- [18] Kramer, M., Xilouris, K. M., Jessner, A., Lorimer, D. R., Wielebinski, R., and Lyne, A. G. *Origin of pulsar radio emission. I. High frequency data.*, 1997, *Astronomy and Astrophysics*, **322**, 846.
- [19] Lorimer, D. R., Bailes, M., and Harrison, P. A. *Pulsar statistics - IV. Pulsar velocities*, 1997, *Monthly Notices of the Royal Astronomical Society*, **289**, 592.
- [20] Lorimer, D. R., Lyne, A. G., and Camilo, F. *A search for pulsars in supernova remnants*, 1998, *Astronomy and Astrophysics*, **331**, 1002.
- [21] Lorimer, D. R., Jessner, A., Seiradakis, J. H., Lyne, A. G., D'Amico, N., Athanasopoulos, A., Xilouris, K. M., Kramer, M., and Wielebinski, R. *A flexible format for exchanging pulsar data*, 1998, *Astronomy and Astrophysics Supplement Series*, **128**, 541.
- [22] Lyne, A. G., Manchester, R. N., Lorimer, D. R., Bailes, M., D'Amico, N., Tauris, T. M., Johnston, S., Bell, J. F., and Nicastro, L. *The Parkes Southern Pulsar Survey - II. Final results and population analysis*, 1998, *Monthly Notices of the Royal Astronomical Society*, **295**, 743.
- [23] Kramer, M., Xilouris, K. M., Lorimer, D. R., Doroshenko, O., Jessner, A., Wielebinski, R., Wolszczan, A., and Camilo, F. *The Characteristics of Millisecond Pulsar Emission. I. Spectra, Pulse Shapes, and the Beaming Fraction*, 1998, *The Astrophysical Journal*, **501**, 270.
- [24] Xilouris, K. M., Kramer, M., Jessner, A., von Hoensbroech, A., Lorimer, D., Wielebinski, R., Wolszczan, A., and Camilo, F. *The Characteristics of Millisecond Pulsar Emission. II. Polarimetry*, 1998, *The Astrophysical Journal*, **501**, 286.
- [25] Kramer, M., Xilouris, K. M., Camilo, F., Nice, D. J., Backer, D. C., Lange, C., Lorimer, D. R., Doroshenko, O., and Sallmen, S. *Profile Instabilities of the Millisecond Pulsar PSR J1022+1001*, 1999, *The Astrophysical Journal*, **520**, 324.
- [26] Kramer, M., Lange, C., Lorimer, D. R., Backer, D. C., Xilouris, K. M., Jessner, A., and Wielebinski, R. *The Characteristics of Millisecond Pulsar Emission. III. From Low to High Frequencies*, 1999, *The Astrophysical Journal*, **526**, 957.
- [27] Kalogera, V. and Lorimer, D. R. *An Upper Limit on the Coalescence Rate of Double Neutron-Star Binaries in the Galaxy*, 2000, *The Astrophysical Journal*, **530**, 890.
- [28] Lorimer, D. R., Kramer, M., Müller, P., Wex, N., Jessner, A., Lange, C., and Wielebinski, R. *A 1400-MHz pilot search for young pulsars*, 2000, *Astronomy and Astrophysics*, **358**, 169.
- [29] Camilo, F., Lorimer, D. R., Freire, P., Lyne, A. G., and Manchester, R. N. *Observations of 20 Millisecond Pulsars in 47 Tucanae at 20 Centimeters*, 2000, *The Astrophysical Journal*, **535**, 975.
- [30] Lorimer, D. R. and Xilouris, K. M. *PSR J1907+0918: A Young Radio Pulsar near SGR 1900+14 and G42.8+0.6*, 2000, *The Astrophysical Journal*, **545**, 385.
- [31] Lorimer, D. R. *Binary and Millisecond Pulsars at the New Millennium*, 2001, *Living Reviews in Relativity*, **4**, 5.
- [32] Freire, P. C., Camilo, F., Lorimer, D. R., Lyne, A. G., Manchester, R. N., and D'Amico, N. *Timing the millisecond pulsars in 47 Tucanae*, 2001, *Monthly Notices of the Royal Astronomical Society*, **326**, 901.
- [33] Heiles, C., Perillat, P., Nolan, M., Lorimer, D., Bhat, R., Ghosh, T., Howell, E., Lewis, M., O'Neil, K., Salter, C., and Stanimirovic, S. *All-Stokes Parameterization of the Main Beam and*

- First Sidelobe for the Arecibo Radio Telescope*, 2001, Publications of the Astronomical Society of the Pacific, **113**, 1247.
- [34] Heiles, C., Perillat, P., Nolan, M., Lorimer, D., Bhat, R., Ghosh, T., Lewis, M., O'Neil, K., Salter, C., and Stanimirovic, S. *Mueller Matrix Parameters for Radio Telescopes and Their Observational Determination*, 2001, Publications of the Astronomical Society of the Pacific, **113**, 1274.
- [35] Karastergiou, A., von Hoensbroech, A., Kramer, M., Lorimer, D. R., Lyne, A. G., Doroshenko, O., Jessner, A., Jordan, C., and Wielebinski, R. *Simultaneous single-pulse observations of radio pulsars. I. The polarization characteristics of PSR B0329+54*, 2001, *Astronomy and Astrophysics*, **379**, 270.
- [36] Löhmer, O., Kramer, M., Mitra, D., Lorimer, D. R., and Lyne, A. G. *Anomalous Scattering of Highly Dispersed Pulsars*, 2001, *The Astrophysical Journal*, **562**, L157.
- [37] McLaughlin, M. A., Arzoumanian, Z., Cordes, J. M., Backer, D. C., Lommen, A. N., Lorimer, D. R., and Zepka, A. F. *PSR J1740+1000: A Young Pulsar Well Out of the Galactic Plane*, 2002, *The Astrophysical Journal*, **564**, 333.
- [38] Lorimer, D. R., Camilo, F., and Xilouris, K. M. *Arecibo Timing Observations of 17 Pulsars along the Galactic Plane*, 2002, *The Astronomical Journal*, **123**, 1750.
- [39] Camilo, F., Manchester, R. N., Gaensler, B. M., Lorimer, D. R., and Sarkissian, J. *PSR J1124-5916: Discovery of a Young Energetic Pulsar in the Supernova Remnant G292.0+1.8*, 2002, *The Astrophysical Journal*, **567**, L71.
- [40] Camilo, F., Stairs, I. H., Lorimer, D. R., Backer, D. C., Ransom, S. M., Klein, B., Wielebinski, R., Kramer, M., McLaughlin, M. A., Arzoumanian, Z., and Müller, P. *Discovery of Radio Pulsations from the X-Ray Pulsar J0205+6449 in Supernova Remnant 3C 58 with the Green Bank Telescope*, 2002, *The Astrophysical Journal*, **571**, L41.
- [41] Bhat, N. D. R., Camilo, F., Cordes, J. M., Nice, D. J., Lorimer, D. R., and Chatterjee, S. *Arecibo Observations of Parkes Multibeam Pulsars*, 2002, *Journal of Astrophysics and Astronomy*, **23**, 53.
- [42] Camilo, F., Lorimer, D. R., Bhat, N. D. R., Gotthelf, E. V., Halpern, J. P., Wang, Q. D., Lu, F. J., and Mirabal, N. *Discovery of a 136 Millisecond Radio and X-Ray Pulsar in Supernova Remnant G54.1+0.3*, 2002, *The Astrophysical Journal*, **574**, L71.
- [43] Roberts, M. S. E., Hessels, J. W. T., Ransom, S. M., Kaspi, V. M., Freire, P. C. C., Crawford, F., and Lorimer, D. R. *PSR J2021+3651: A Young Radio Pulsar Coincident with an Unidentified EGRET  $\gamma$ -Ray Source*, 2002, *The Astrophysical Journal*, **577**, L19.
- [44] Camilo, F., Manchester, R. N., Gaensler, B. M., and Lorimer, D. R. *Heartbeat of the Mouse: A Young Radio Pulsar Associated with the Axisymmetric Nebula G359.23-0.82*, 2002, *The Astrophysical Journal*, **579**, L25.
- [45] Kim, C., Kalogera, V., and Lorimer, D. R. *The Probability Distribution of Binary Pulsar Coalescence Rates. I. Double Neutron Star Systems in the Galactic Field*, 2003, *The Astrophysical Journal*, **584**, 985.
- [46] Freire, P. C., Camilo, F., Kramer, M., Lorimer, D. R., Lyne, A. G., Manchester, R. N., and D'Amico, N. *Further results from the timing of the millisecond pulsars in 47 Tucanae*, 2003, *Monthly Notices of the Royal Astronomical Society*, **340**, 1359.
- [47] McLaughlin, M. A., Stairs, I. H., Kaspi, V. M., Lorimer, D. R., Kramer, M., Lyne, A. G., Manchester, R. N., Camilo, F., Hobbs, G., Possenti, A., D'Amico, N., and Faulkner, A. J. *PSR J1847-0130: A Radio Pulsar with Magnetar Spin Characteristics*, 2003, *The Astrophysical Journal*, **591**, L135.



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