

Curriculum Vitae

1. Personal Profile

- ★ **Name:** ● MANJARI BAGCHI
- ★ **Date of Birth:** ● 12th January, 1978
- ★ **Citizenship:** ● Indian

2. Contact Information

- ★ **Office:** ● International Centre for Theoretical Sciences - TIFR,
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- ★ **Permanent Residence:** ● Senjuti,
Dalmadal Road
P.O. Bishnupur
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India 722122
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3. Research Profile

- ★ **Area of Interest:** ● Properties of radio pulsars, RRATs
● Pulsars in globular clusters
● Physics of neutron stars
● Gravitational waves
● Dense matter Equations of State
● Properties of globular clusters
- ★ **Present Status:** ● Post-Doctoral Visiting Scientist,
International Centre for Theoretical Sciences - TIFR, Bangalore, India
since July 1, 2013.

★ Past Employment:

- Post-Doctoral Research Associate,
Department of Physics, West Virginia University,
Morgantown, USA; April 1, 2010 - April 29, 2013.
- Post-Doctoral Fellow,
Inter University Centre for Astronomy and Astrophysics (IUCAA),
Pune, India; September 15, 2009 - March 30, 2010.
- Visiting Fellow (Post-Doctoral Fellow),
Department of Astronomy and Astrophysics,
Tata Institute of Fundamental Research (TIFR), Mumbai, India;
March 22, 2007 - September 14, 2009.

★ Experience of Refereeing for International Journals:

1. Astrophysics and Space Science (in 2011).
2. Nature (in 2010).

★ Other Research Activities:

1. Processing Arecibo drift-scan pulsar survey data using the package PRESTO; undergraduate students of the Department of Physics, West Virginia University are searching the processed files for new pulsars.
2. Involved in maintaining the globular cluster database (<http://gclusters.altervista.org/index.php>).

★ Media Coverage:

1. “Strange stars, stranger secrets” by Biplab Das - An article in Nature India, (published online on 2 July 2008; doi:10.1038/nindia.2008.234) covering our paper “Chromothermal oscillations and collapse of strange stars to black holes: astrophysical implications” by Bagchi *et al.*, Mon. Not. R. Astron. Soc. 387, 115.

★ Experience of Supervising Students:

1. Co-supervised Angela Cortes Nieves (an undergraduate student, Department of Physics, West Virginia University) in her project with Prof. Maura McLaughlin (2010 - 2012).
2. Co-supervising Craig Tenney (an undergraduate student, Department of Physics, West Virginia University) in his project with Prof. Duncan Lorimer (2013 - continuing).

★ Teaching Experience:

1. Several lectures on “Searching Pulsars in a Drift-scan Survey” to undergraduate students of the Department of Physics, West Virginia University.
2. A short course on “Compact Stars” to 2nd year M.Sc students from Presidency College, Kolkata (having astrophysics as an elective paper); on October 26-27, 2009, at IUCAA, Pune, India.
3. A seminar on “Compact Stars” to 1st and 2nd year graduate students of TIFR; on August 7, 2009, at TIFR, Mumbai, India.

★ **Lectures in Schools/Workshops:**

1. Second Workshop for Pulsar Observatory for Students, Radio Astronomy Centre - TIFR, Ooty, India; July 9-12, 2013.

★ **Workshops/Conferences/Seminars/Colloquiums attended:**

1. Aspen Winter Conference on “Physical Applications of Millisecond Pulsars”, at Aspen Center for Physics, Aspen, USA; January 19-24, 2013. **“The Detectability of Eccentric Binary Pulsars”: an oral presentation.**
2. NANOGrav Fall Science Meeting, at Oberlin College, Oberlin, Ohio, USA; October 24-26, 2012.
3. Aspen Winter Conference on “The Physics of Astronomical Transients”, at Aspen Center for Physics, Aspen, USA; January 21-27, 2012. **“Isolated dispersed radio bursts”: an oral presentation.**
4. “Exploring Low-Mass Dark Matter Candidates”, at Pittsburgh Particle Physics, Astrophysics and Cosmology Center, Pittsburgh, USA; November 14-16, 2011.
5. “International Pulsar Timing Array (IPTA) Student Workshop and Science Meeting”, in West Virginia, USA; June 6-17, 2011.
6. “86th Annual Meeting of West Virginia Academy of Science”, at West Virginia University Institute of Technology, Montgomery, USA; April 2, 2011. **“Luminosities of recycled pulsars in globular clusters”: a poster presentation.**
7. “Fab Five Fest”, at Arecibo Observatory, Arecibo, Puerto Rico, March 20-22, 2011. **“Luminosities of recycled pulsars in globular clusters”: a poster presentation.**
8. Fermi Regional Workshop, at University of Michigan, Ann Arbor, Michigan, USA, December 9-10, 2010. **“Gamma-ray emission from globular clusters and implications in pulsar research”: an oral presentation.**
9. “Radio pulsars: An astrophysical key to unlock the secrets of the Universe”, at Chia Laguna Resort, Sardinia, Italy; October 10-15, 2010. **“The luminosity function of millisecond pulsars in globular clusters”: an oral presentation.**
10. “The 27th Meeting of the Astronomical Society of India (ASI)”, at Indian Institute of Astrophysics (IIA), Bangalore, India; February 18-20, 2009. **“Orbital eccentricity of binary radio pulsars in globular clusters and interaction between stars”: a poster presentation.**
11. “The Low-Frequency Radio Universe”, at National Centre for Radio Astrophysics (NCRA), Pune, India; December 8-12, 2008. **“Orbital parameters of binary radio pulsars in globular clusters and stellar interactions”: a poster presentation.**
12. “School and Workshop on Supernovae & Gamma-Ray Bursts at Low z in the Era of Reionization”, in Darjeeling, India (jointly organized by TIFR and IIA); May 23-29, 2008.
13. “Astrophysics of Compact Objects”, in Huangshan, China; July 1-7, 2007. **“Strange Stars: an interesting member of the compact object family”: a poster presentation.**
14. 10th “Young Astronomers’ Meet”, at IIA, Bangalore, India; January 3-5, 2007. **“Searching strange stars by observing x-rays, gamma rays and radio waves”: an oral presentation.**
15. “Study of Emission from Hot Diffuse Gas with ASTROSAT”, at Christ College, Bangalore, India; December 27, 2006 - January 3, 2007. **“A glimpse to strange stars”: an oral presentation.**

16. “An Introductory Workshop on Astrophysics”, at Department of Physics, College of Science, M. L. Sukhadia University, Udaipur, India; December 20-24, 2006.
17. “In Heaven and on Earth 2006: The Nuclear Equation of State in Astrophysics”, at McGill University, Montreal, Canada; July 5 - 7, 2006. **“Temperature dependence of strange stars’ maximum mass and consequences to models of gamma ray bursts within the ‘Quark-Nova’ picture”: a poster presentation.**
18. “Supernova and Gamma-Ray Burst Remnants” at Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA; February 6 - 10, 2006. **“Explanation of GRB and early afterglows as ‘Quark-Nova’ phenomenon”: a poster presentation.**
19. “Current Puzzles in Astrophysics and its Link to the Fundamental Physics”, at Presidency College, Department of Physics, Kolkata, India, under the auspices of the Shyamal Sengupta Memorial Lectures Committee; January 7, 2006. **“Some peculiar aspects of strange stars”: an oral presentation.**
20. “Workshop on Astrostatistics” jointly organized by IUCAA and University of Calcutta, at Department of Statistics, University of Calcutta, Kolkata, India; December 21-23, 2005.
21. 9th “Young Astronomers’ Meet” at IUCAA jointly organized by IUCAA and NCRA-TIFR, at IUCAA, Pune, India; November 29 - December 02, 2005. **“General relativistic contribution of gravity to surface tension of strange stars and its possible signature in x-ray astronomy”: an oral presentation.**
22. The seminars for “The Celebration of The Year of Physics and The Inauguration of The St. Xavier’s College Observatory”, at St. Xavier’s College, Kolkata, India; March 14 - 15, 2005.
23. 5th International Conference on “Physics and Astrophysics of Quark Gluon Plasma”, jointly organized by Variable Energy Cyclotron Centre and Saha Institute of Nuclear Physics, Kolkata, India; February 8 - 12, 2005. **“Strange star Equation of State with a modified Richardson potential”: a poster presentation.**
24. COSPAR Colloquium on “Spectra and Timing of Compact X-Ray Binaries” at TIFR, Mumbai, India; January 17 - 21, 2005. **“Strange star Equation of State with a modified Richardson potential”: a poster presentation.**
25. 3 Day Seminar organized by IUCAA Reference Centre of Jadavpur University, Kolkata, India; September 13 - 15, 2004.
26. 2nd Astrosat Workshop on “Blackhole Astrophysics” at Nuclear Research Laboratory, Bhabha Atomic Research Centre (BARC), Mumbai, India; May 10 - 16, 2004.
27. IUCAA-IIT Kgp “Workshop on High-Energy Astrophysics” at IIT, Kharagpur, India; February 23 - 25, 2004. **“Application of an improved and modified Richardson potential to strange stars”: an oral presentation.**

★ **Seminars given:**

1. “Importance of Binary Radio Pulsars in Gravitational Physics” - a seminar given on May 30, 2013 at International Centre for Theoretical Sciences - TIFR, Bangalore, India.
2. “Binary Radio Pulsars: Prospects and Problems” - a seminar given on May 29, 2013 at Raman Research Institute, Bangalore, India.
3. “Binary Radio Pulsars: Prospects and Problems” - a seminar given on May 15, 2013 at Saha Institute of Nuclear Physics, Kolkata, India.
4. “What do the orbital and stellar properties of millisecond pulsars in globular clusters tell us?” - a seminar given on December 12, 2011 at Indian Institute of Astrophysics, Bangalore, India.

5. "A study of observed luminosities of millisecond pulsars in globular clusters aiming a better understanding of this population" - a seminar given on December 9, 2011 at Raman Research Institute, Bangalore, India.
6. "Millisecond pulsars in Galactic globular clusters" - a seminar given on November 30, 2011 at Inter University Centre for Astronomy and Astrophysics, Pune, India
7. "A study of observed luminosities of millisecond pulsars in globular clusters aiming a better understanding of this population" - a seminar given on November 3, 2011 at the Center for Interdisciplinary Exploration and Research in Astrophysics, Northwestern University, Chicago, USA.
8. "Effects of stellar interactions on orbital parameters of binary radio pulsars in globular clusters" - a seminar given on November 4, 2009 at HRI, Allahabad, India.
9. "Effects of stellar interactions on orbital parameters of binary radio pulsars in globular clusters" - a seminar given on March 30, 2009 at Argelander-Institut für Astronomie, Bonn, Germany.
10. "Effects of three body stellar interactions on orbital parameters of binary radio pulsars in globular clusters" - a seminar given on March 25, 2009 at Institute of Astronomy, University of Cambridge, Cambridge, UK.
11. "Radio pulsar binaries in globular clusters: their orbital eccentricities and stellar interactions" - a seminar given on March 19, 2009 at Royal Observatory of Edinburgh, Edinburgh, UK.
12. "Binary radio pulsars in globular clusters: effects of dense stellar environment" - a seminar given on March 11, 2009 at Jodrell Bank Centre for Astrophysics, University of Manchester, Manchester, UK.
13. "Orbital parameters of binary radio pulsars in globular clusters resulting from three body stellar interactions" - a seminar given on March 10, 2009 at Jodrell Bank Observatory, Cheshire, UK.
14. "The effects of stellar interactions on orbital parameters of binary radio pulsars in globular clusters" - a seminar given on March 4, 2009 at the Department of Physics, University of Oxford, Oxford, UK.
15. "Effect of three body stellar interactions on binary radio pulsars in globular clusters" - a seminar given on January 13, 2009 at Inter University Centre for Astronomy and Astrophysics, Pune, India.
16. "Binary-single star interactions in globular clusters: explanation of the observed eccentricity - orbital period distribution of the binary radio pulsars" - a seminar given on July 21, 2008 at Raman Research Institute, Bangalore, India.
17. "Properties of Strange Quark Matter in connection to astrophysics" - a seminar given on January 21, 2008 at The Institute of Mathematical Science, Chennai, India.
18. "Probing dense matter Equations of State by astronomical observations" - a seminar given on January 9, 2008 at Indian Institute of Science, Bangalore, India.
19. "Strange Stars: an interesting member in the compact object family" - a seminar given on January 9, 2007 at Raman Research Institute, Bangalore, India.
20. "Studying strange stars in the light of x-ray and gamma-ray" - a seminar given on October 17, 2006 at Tata Institute of Fundamental Research, Mumbai, India.
21. "Effect of temperature on strange star properties" - a seminar given on September 19, 2006 at Jadavpur University, Kolkata, India.
22. "Strange stars: an update" - a seminar given on February 15, 2006 at San Diego State University, San Diego, USA.

★ **Participation in Schools:**

1. Sixth NAIC/NRAO School on Single Dish Radio Astronomy, at Green Bank, West Virginia, USA; July 10-15, 2011.
2. “The 2nd IIA – Penn State Astrostatistics School”, at Vainu Bappu Observatory, Kavalur, India; July 9-16, 2008.
3. Spring School on “Observing the X and Gamma-ray Sky”, in Cargese, Corsica, France; April 3 - 14, 2006 : **“Importance of strange star models in x-ray astronomy”**: a poster presentation.
4. XXI SERC Preparatory School in Theoretical High Energy Physics, at Harish-Chandra Research Institute, Allahabad, India; November 6 - November 26, 2005.
5. XX SERC Preparatory School in Theoretical High Energy Physics, at The Institute of Mathematical Sciences, Chennai, India; September 27 - October 16, 2004.

★ **Visits to scholarly places:**

1. Raman Research Institute (RRI), Bangalore, India. May 2013, December 2011, February 2009, July 2008, January 2008, June 2007.
2. Saha Institute of Nuclear Physics, May 2013.
3. Tata Institute of Fundamental Research (TIFR), Mumbai, India. December 2011, October 2006, March-April 2005.
4. Inter University Centre for Astronomy and Astrophysics (IUCAA), Pune, India. November-December 2011, January 2009, October 2006, January 2006, April 2005, October 2003, July 2003, January 2003.
5. Harish-Chandra Research Institute (HRI), Allahabad, India. November 2011, November 2009, February-March 2006, June-July 2005.
6. Center for Interdisciplinary Exploration and Research in Astrophysics, Department of Physics and Astronomy, Northwestern University, Chicago, USA. November 2011.
7. Astronomical Institute “Anton Pannekoek”, Amsterdam, The Netherlands. April 2009.
8. Argelander Institut für Astronomie, Bonn, Germany. March 2009.
9. Institute of Astronomy, University of Cambridge, Cambridge, UK. March 2009.
10. School of Mathematics, The University of Edinburgh, Edinburgh, UK. March 2009.
11. Jodrell Bank Centre for Astrophysics, The University of Manchester, Manchester, UK. March 2009.
12. University of Oxford, Oxford, UK. March 2009.
13. Radio Astronomy Centre (RAC), Ooty, India. November 2008.
14. The Institute of Mathematical Sciences (IMSc), Chennai, India. January 2008.
15. Department of Physics and Astronomy, University of Calgary, Calgary, Canada. June - August 2006.
16. San Diego State University, San Diego, USA. February 2006.

★ **Grants:**

- Faculty Travel Grant, West Virginia University, Morgantown, WV, USA, 2013
- Faculty Travel Grant, West Virginia University, Morgantown, WV, USA, 2011
- UK-India Education and Research Initiative (UKERI) Grant for visiting various universities in UK to exchange research ideas, 2009.

★ **Scholarships/Awards:**

- Post-Doctoral Visiting Scientist Fellowship, International Center for Theoretical Sciences - TIFR, Bangalore, India, 2013 - presently continuing.
- 2011 International Scholar Recognition Award, West Virginia University, Morgantown, WV, USA.
- Post-Doctoral Fellowship, West Virginia University, Morgantown, WV, USA, 2010 - 2013.
- Post-Doctoral Fellowship, Inter University Centre for Astronomy and Astrophysics, Pune, India, 2009 - 2010.
- Post-Doctoral Fellowship, Tata Institute of Fundamental Research, Mumbai, India, 2007 - 2009.
- Senior Research Fellowship, Department of Science and Technology (DST), Govt. of India through a project at Presidency College, Kolkata, India, 2005 - 2006.
- Junior Research Fellowship, Department of Science and Technology (DST), Govt. of India through a project at Presidency College, Kolkata, India, 2002 - 2004.

4. Academic Profile

★ **Degrees:**

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| <ul style="list-style-type: none"> • <i>Ph.D.</i>
(2007)
<i>Thesis Title:</i> | <p>Jadavpur University, Kolkata,
West Bengal, India.
“Studies of stellar and terrestrial observations
from the point of view of QCD models.”</p> |
| <p><i>Supervisors:</i></p> | <p>Prof. Jishnu Dey, IUCAA Associate,
Presidency College, Kolkata, India and
Prof. Narayan Banerjee, IISER, Kolkata, India
(formerly at Jadavpur University, Kolkata, India)</p> |
| <ul style="list-style-type: none"> • <i>M.Sc. (1st Class,
Specialization in Nuclear
Physics)</i>
2002 | <p>Presidency College, University of Calcutta, Kolkata,
West Bengal, India.</p> |
| <ul style="list-style-type: none"> • <i>B.Sc.</i>
(Honours in Physics)
2000 | <p>Bethune College, University of Calcutta, Kolkata,
West Bengal, India.</p> |

★ **Additional Qualification:**

- *1 Year Course on
“Basic Diploma in Computing”
2001*

Indus Institute of Information Management,
in association with
Department of Youth Services,
Government of West Bengal.

★ **Computational Skills:**

- *Operating Systems*
- *Programming Languages*
- *Software Packages*

- *Data Analysis Software*

Linux, Dos, Windows.

Fortran-77, Fortran-90, C, Python, HTML.

LaTeX, Gnuplot, pgplot, Xfig, Mathcad, GIMP, Mathematica, Sigmaplot,
R, MS Office, etc.

heasoft : software to analyze x-ray data.

PRESTO, SIGPROC, TEMPO2 : softwares to analyze radio pulsar data.

Fermi science tools: software to analyze gamma-ray data
from Fermi space telescope.
