

Department of Physics,  
The University of Texas Rio Grande Valley,  
One West University Blvd.,  
Brownsville TX 78520, USA

# Soumya D. Mohanty

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## Appointments

2015 – Present: **Professor**

Dept. of Physics and Astronomy & Center for Gravitational Wave Astronomy (CGWA),  
The University of Texas Rio Grande Valley (UTRGV)

2009 – 2015: **Associate Professor**

Dept. of Physics and Astronomy & Center for Gravitational Wave Astronomy (CGWA),  
The University of Texas at Brownsville (UTB)

2003 – 2009: **Assistant Professor**

Dept. of Physics and Astronomy & Center for Gravitational Wave Astronomy (CGWA),  
The University of Texas at Brownsville (UTB)

2000 – 2003: **Post Doc**

Max Planck Institut fuer Gravitationsphysik (Albert Einstein Institute), Golm, Germany.

1998 – 2000: **Post Doc**

Center for Gravitational Physics and Geometry, Department of Physics, Penn State University, University Park, PA, USA.

1997 – 1998: **Joint appointment**

(Principal) Visiting scholar, LIGO project and Department of Physics, Caltech, Pasadena, USA.

(Formal) Post Doc, Department of Physics and Astronomy, Northwestern University, Evanston, IL, USA.

## Education

1993 – 1997: **PhD, Physics**

Inter University centre for Astronomy and Astrophysics, Pune, India.

*Thesis:* Efficient data analysis techniques for the detection of gravitational waves from some important astrophysical sources.

1991 – 1993: **M.S., Physics**

Delhi University, India

1988 – 1991: **B.S., Physics**

Delhi University, India

## Honours and awards

- Faculty Exceptional Merit Awards, UTB (2013, 2011, 2007)
- Award winning proposal, “C2i Gaming Challenge: Developing New Ways to Use Game-Based Learning to Help Students Achieve,” National Education Association (NEA) Foundation and Microsoft Partners in Learning, (2012), U.S. Dept. of Education Open Innovation Portal.

- Earned UTB a national designation in 2012 as one of the “10 Best Colleges for Game-Based Learning” by bestcollegesonline.com (along with UW Madison, Purdue, The Wharton School etc.)
- Featured in:
  - “Orange and White”, Division of Institutional Advancement, Fall 2012 issue.
  - “Best of Faculty 2012”, UT Brownsville, “Inside UTB”, Dec 2012 issue.
  - Brownsville Herald, “Physics Professor Honored,” pp. C2, July 4 issue (2012).
- Several Invited Colloquia and talks (*attached*).
- Invited attendee, Xiangshan science conference, China (Sep 2018).
- Invited lecture series on gravitational wave data analysis:
  - Institute of Theoretical Physics, Chinese Academy of Sciences (CAS), Beijing, China, Dec 3-9 (2017)
  - Academy of Mathematics and Systems Science (AMSS), CAS, Jun 4-18 (2018)
  - Academy of Mathematics and Systems Science (AMSS), CAS, Feb 17-Mar 8 (2019)
- Invited lecturer series on swarm intelligence methods:
  - *5<sup>th</sup> International Winter School on Big Data (BigDat 2019)*, Cambridge University, UK, Jan 7-11 (2019); Organized by University of Cambridge, Cambridge Big Data, and IRDTA Brussels / London. Course Title: *Swarm Intelligence Methods for Statistical Regression*
  - *3<sup>rd</sup> International Winter School on Big Data (BigDat 2017)*, Bari, Italy, February 13-17 (2017); Organized by University of Bari "Aldo Moro", and Rovira i Virgili University. Course Title: *Swarm Intelligence Methods and Optimization Problems in Big Data Analytics*
- Invited Lecturer, *Visiting International Professors Program*, L. N. Gumilyov Eurasian National University, Astana, Kazakhstan (2014). [International Summer School of Science, *Modern Information and Communication Technologies in Industry Applications*.]
- Invited lecturer:
  - *Summer school in gravitational waves and numerical relativity*, Morningside center of Mathematics and AMSS: Chinese academy of sciences, Beijing, China (2008)
  - *Summer school on Gravitational Wave Astronomy*, Yunan University, Kun Ming, China (2009)
- Member, Scientific Organizing Committee, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> and 13<sup>th</sup> Gravitational Wave Data Analysis Workshop (GWDAAW). *A major annual conference in the field of Gravitational Wave Astronomy*.
  - *GWDAAW-10, UTB, Brownsville, U.S.A, Dec 2005*
  - *GWDAAW-11, AEI, Potsdam, Germany, Dec 2006*
  - *GWDAAW-12, MIT, Boston, U.S.A, Dec 2007*
  - *GWDAAW-13, CGWA, Puerto Rico, Jan 2009*

- Invited attendee, *Geometry and Physics after 100 years of Einstein's Relativity*, Conference held on the occasion of the 10<sup>th</sup> anniversary of the Max Planck Institut für Gravitationsphysik, Germany (April, 2005).
- PhD research fellowship of the Council of Scientific and Industrial Research (CSIR) of India (1993 – 1997). (Selective award based on a nation-wide exam.)

### **Grants awarded**

- As Principal or Co-Principal Investigator:
  - 2005: Cottrell College Science Award, Research Corporation, *Improved hierarchical search algorithms for Gravitational wave data analysis* (\$22,400 for 2 years). Principal Investigator (PI).
  - 2006: U.S. National Science Foundation, *Support for LIGO data analysis activities at the University of Texas at Brownsville*, (\$400,000 for 3 years). PI.
  - 2009: U.S. National Science Foundation, *Support for LIGO data analysis activities at the University of Texas at Brownsville*, (\$450,000 for 3 years). Co-PI.
  - 2012: U.S. National Science Foundation, *Support for LIGO data analysis activities at the University of Texas at Brownsville* [NSF PHY-1205585], (\$450,000 for 3 years). Co-PI.
  - 2015: U.S. National Science Foundation, *Support for LIGO data analysis activities at the University of Texas at Brownsville* [NSF PHY- 1505861], (\$450,000 for 3 years). Co-PI.
- As Senior Investigator:
  - 2007: U.S. National Science Foundation, Centre for Excellence in Research and Teaching (CREST) – *Expanding inter-disciplinary research at the Centre for gravitational wave astronomy*, (\$4.98 million, 5 years). Senior Investigator (with summer salary support).
  - 2009: U.S. National Science Foundation, MRI award (\$700,000) for acquisition of a supercomputer ('Futuro'). Senior investigator.
  - 2009: NASA URC award to Center for Gravitational Wave Astronomy [NASA NNX09AV06A], (\$5 million). Senior investigator (with summer salary support).
  - 2012: U.S. National Science Foundation, Centre for Excellence in Research and Teaching (CREST) – *CGWA in the era of multi-messenger astronomy* [NSF HRD-1242090], (\$5 million, 5 years) Senior Investigator (with summer salary support).
- Participant:
  - 2012: U.S. National Science Foundation, *REU and RET Site in Physics at the University of Texas at Brownsville*. Undergraduate research project supervisor.

- 2015: U.S. National Science Foundation, *REU and RET Site in Physics at the University of Texas at Brownsville*. Undergraduate research project supervisor.
- 2018: U.S. National Science Foundation, *REU and RET Site in Physics at the University of Texas at Rio Grande Valley*. Undergraduate research project supervisor.

**Professional activities**

- Referee:
  - 26th European Signal Processing Conference (EUSIPCO 2018)
  - Classical and Quantum Gravity
  - IEEE transactions on Evolutionary Computation
  - American Journal of Physics
  - International Journal of Information and Communication Technology
  - International Journal of Modern Physics-D
  - Astronomy & Astrophysics
  - Measurement Science and Technology
  - Grant proposals: National Science Foundation and Research Corporation
  - NASA Postdoctoral program
- 1999-2015: Member, LIGO Scientific Collaboration ([www.ligo.org](http://www.ligo.org))
  - *Internal reviewer for the Burst Analysis group, Internal technical paper reviewer*
- Chair, Local Organizing Committee, 10<sup>th</sup> Gravitational Wave Data Analysis Workshop, 2005.
- Editor (with M. Diaz), Proceedings of the 10<sup>th</sup> Gravitational Wave Data Analysis Workshop, Special issue of Classical and Quantum Gravity (Oct, 2006)
- Editor (with M. Diaz and F. Jenet), Proceedings of the 13<sup>th</sup> Gravitational Wave Data Analysis Workshop, Special issue of Classical and Quantum Gravity (Jan, 2009)

**Teaching and Advising**

- New course development for non-science majors (Dec 2010): Elementary Physics through video games (PHYS 1310) and associated lab module (PHYS 1110)
  - Current enrolment (Spring 2014): 32 students
- Courses taught:
  - Undergraduate: Modern Physics, Classical Mechanics, University Physics I and II, Electromagnetic theory
  - Graduate: Classical Mechanics, Quantum Mechanics II (Cross listed with UT Arlington as PHYS 5308 in Fa2015), Advanced Statistical Methods for Modern Astronomy, Computational Physics, Thesis and Research courses
- Undergraduate research supervision: 7 students including 6 NSF-REU students
- Theses supervised: 7 M.S. students and 2 PhD students
- Postdoctoral supervision:
  - Dr. Rajesh K. Nayak (2004-2007)
  - Dr. Kazuhiro Hayama (2005-2008)
- Visiting students: 8 international students (Canada, China, India)

# List of Publications

## Books

1. *Swarm Intelligence Methods for Statistical Regression*, Soumya D. Mohanty, CRC press (2018).

## Refereed journal publications

- Papers authored with the LIGO Scientific Collaboration (LSC) appear after the list of non-LSC papers.
    - '♣' indicates LSC papers that cite non-LSC papers by Mohanty. These are listed first.
1. *Fundamental Physics with the Square Kilometer Array*, P. Bull, S. Camera, K. Kelley, H. Padmanabhan, J. Pritchard, A. Raccanelli, S. Riemer-Sørensen, L. Shao, S. Andrianomena, E. Athanassoula, D. Bacon, R. Barkana, G. Bertone, C. Bonvin, A. Bosma, M. Brügggen, C. Burigana, C. Bøhm, F. Calore, J. A. R. Cembranos, C. Clarkson, R. M. T. Connors, Á. de la Cruz-Dombriz, P. K. S. Dunsby, N. Fornengo, D. Gaggero, I. Harrison, J. Larena, Y.-Z. Ma, R. Maartens, M. Méndez-Isla, S. D. Mohanty, S. G. Murray, D. Parkinson, A. Pourtsidou, P. J. Quinn, M. Regis, P. Saha, M. Sahlén, M. Sakellariadou, J. Silk, T. Trombetti, F. Vazza, T. Venumadhav, F. Vidotto, F. Villaescusa-Navarro, Y. Wang, C. Weniger, L. Wolz, F. Zhang, B. M. Gaensler, A. Weltman, Submitted to PASA, arXiv:1810.02680 [astro-ph.CO] (2018).
  2. *Particle Swarm Optimization based search for gravitational waves from compact binary coalescences: performance improvements*, Marc E. Normandin, Soumya D. Mohanty, Thilina S. Weerathunga, Phys. Rev. D. **98** 044029 (2018).
  3. *Detection and Estimation of Unmodeled Chirps*, Soumya D. Mohanty, in Proc. 26th European Signal Processing Conference (EUSIPCO), p. 2643-2647, IEEE Xplore (2018).
  4. *Prospects for gravitational wave astronomy with next generation large-scale pulsar timing arrays*, Yan Wang, Soumya D. Mohanty, Journal of Physics Conference Series **957** 012003 (2018).
  5. *Spline Based Search Method for Unmodeled Transient Gravitational Wave Chirps*, Soumya D. Mohanty, Phys. Rev. D **96** 102008 (2017). [Featured in PRD 'Kaleidoscope' for Nov 2017.]
  6. *Performance of particle swarm optimization on the fully-coherent all-sky search for gravitational waves from compact binary coalescences*, Thilina S. Weerathunga, Soumya D. Mohanty, Phys. Rev. D **95** 124030 (2017).
  7. *Continuous gravitational wave searches with pulsar timing arrays: Maximization versus marginalization over pulsar phase parameters*, Yan Wang, Soumya D. Mohanty, Yi-Qian Qian, Journal of Physics: Conference Series **840** 012058 (2017).
  8. *Pulsar timing array based search for supermassive black hole binaries in the SKA era*, Yan Wang, Soumya D. Mohanty, PRL **118** 151104 (2017). [Featured on the cover of PRL.]
  9. *Detection and localization of continuous gravitational waves with pulsar timing arrays: the role of pulsar terms*, X.-J. Zhu, L. Wen, J. Xiong, Y. Xu, Y. Wang, S. D. Mohanty, G. Hobbs, R. N. Manchester, MNRAS **461** 1317-1327 (2016).
  10. *Coherent Network Analysis for Continuous Gravitational Wave Signals in a Pulsar Timing Array: Pulsar Phases as Extrinsic*

- Parameters*, Y. Wang, S. D. Mohanty, F. Jenet, *ApJ* **815** 125 (2015).
11. *A coherent method for the detection and estimation of continuous gravitational wave signals using a pulsar timing array*, Y. Wang, S. D. Mohanty, F. Jenet, *ApJ* **795** 15(2014).
  12. *Detection and estimation of unmodeled narrowband nonstationary signals: application of particle swarm optimization in gravitational wave data analysis*, Soumya D. Mohanty, Proceedings of the 2014 conference companion on Genetic and evolutionary computation companion (GECCO Comp '14). ACM, New York, NY, USA, 173-174 (2014).
  13. *Particle Swarm Optimization and regression analysis II*, Soumya D. Mohanty, *Astronomical Review* **7**, Issue 4, 4-25 (2012). [Invited article.]
  14. *Particle Swarm Optimization and regression analysis I*, Soumya D. Mohanty, *Astronomical Review* **7**, Issue 3, 29-35 (2012). [Invited article.]
  15. *Towards optimal integration of external information in a multi-trigger population study analysis*, Marc Normandin and Soumya D. Mohanty, *Journal of Physics: Conference Series* **363** 012030 (2012).
  16. *Teaching introductory undergraduate physics using commercial video games*, Soumya D. Mohanty and Sergio Cantu, *Physics Education* **46** 570 (2011).
  17. *Particle swarm optimization and gravitational wave data analysis: Performance on a binary inspiral testbed*, Y. Wang and Soumya D. Mohanty, *Phys. Rev. D* **81** 063002 (2010).
  18. *An implementation of matched filtering using the multi-dimensional Fourier transform*, Soumya D. Mohanty, *Class. Quantum Grav.* **25** 184009 (2008).
  19. *Source tracking for Sco X-1*, K. Hayama, S. D. Mohanty, S. Desai, M. Rakhmanov, T. Summerscales, S. Yoshida, *Class. Quantum Grav.* **25** 184021 (2008).
  20. *Coherent network analysis for search for gravitational waves associated with pulsar glitches*, K. Hayama, S. Desai, K. Kotake, S. D. Mohanty, M. Rakhmanov, T. Summerscales, S. Yoshida, *GWDAAW-12*, *Class. Quantum Grav.* **25** 184016 (2008).
  21. *Determination of the angular momentum distribution of supernovae from gravitational wave observations*, K. Hayama, S. Desai, K. Kotake, S. D. Mohanty, M. Rakhmanov, T. Summerscales, S. Yoshida, *GWDAAW-12*, *Class. Quantum Grav.* **25** 184022 (2008).
  22. *Proposed method for searches of gravitational waves from PKS 2155-304 and other Blazar flares*, S. Desai, K. Hayama, S. D. Mohanty, M. Rakhmanov, T. Summerscales and S. Yoshida, *GWDAAW-12*, *Class. Quantum Grav.* **25** 184024 (2008).
  23. *Cluster analysis of simulated gravitational wave triggers using S-MEANS and constrained validation clustering*, L. R. Tang, H. Lei, S. Mukherjee, S. D. Mohanty, *GWDAAW-12*, *Class. Quantum Grav.* **25** 184023 (2008).

24. *Monitoring Sco X-1 for the detection of gravitational waves with networks of gravitational wave detectors*, Kazuhiro Hayama, Soumya D. Mohanty, Malik Rakhmanov, Shantanu Desai, Tiffany Summerscales, 10<sup>th</sup> international conference on topics in astroparticle and underground physics (TAUP2007), Journal of Physics: Conference Series, **120** 032009 (2008).
25. *Similarity driven clustering and its applications in gravitational wave data mining*, Lei Hansheng, Lappoon Tang, J. R. Iglesias, S. Mukherjee, and S. D. Mohanty, International workshop on knowledge discovery from ubiquitous data streams, 18th European conference on Machine learning (ECML) and 11th European conference on Principles and Practice of Knowledge Discovery in Databases (PKDD), Warsaw, Poland: ECML, PKDD proceedings, Springer Verlag (LNAI series) (2007).
26. *Coherent network analysis for triggered gravitational wave burst searches*, Kazuhiro Hayama, Soumya D. Mohanty, Malik Rakhmanov, Shantanu Desai, Class. Quantum Grav. **24** S681 (2007).
27. *Tomographic method for LISA binaries: application to MLDC data*, Rajesh K. Nayak, Soumya D. Mohanty, Kazuhiro Hayama, Class. Quantum Grav. **24** S587 (2007).
28. *Report on the first round of the Mock LISA data challenges*, K. A. Arnaud et al, Class. Quantum Grav. **24** S529 (2007).
29. *Variability of signal to noise ratio and likelihood analysis of gravitational wave burst signals using a network of detectors*, Soumya D. Mohanty, Malik Rakhmanov, Sergei Klimenko, Guenakh Mitselmakher, Classical Quant. Grav. **23** 4799 (2006).
30. *Tomographic approach to resolving the distribution of LISA Galactic binaries*, Soumya D. Mohanty, Rajesh K. Nayak, Phys. Rev. D **73** 083006 (2006).
31. *Population study of gamma ray bursts: detection sensitivity and upper limits*, Soumya D. Mohanty, Class. Quantum Grav. **23** S723 (2006).
32. *Constraint likelihood method: generalization for coloured noise*, Sergei Klimenko, Soumya D. Mohanty, Malik Rakhmanov, Guenakh Mitselmakher, J. Phys.: Conf. Ser. **32** 12-17 (2006).
33. *Improving the sensitivity of searches for an association between gamma-ray bursts and gravitational waves*, S.D. Mohanty, Class. Quantum Grav, **22** S1349 (2005).
34. *Progress in non-parametric change point detection of gravitational wave bursts: the MULTIKSCD algorithm*, S.D. Mohanty, A. Jiménez, Class. Quantum Grav. **22** S1233 (2005).
35. *Constraint likelihood analysis for a network of gravitational wave detectors*, Sergei Klimenko, Soumya D. Mohanty, Malik Rakhmanov, Guenakh Mitselmakher, Phys. Rev. D **72** 122002 (2005).
36. *Search algorithm for a gravitational wave signal associated with gamma ray burst GRB030329 using the LIGO detectors*, Soumya D. Mohanty et al, Class. Quantum Grav. **21** S1831-S1837 (2004).

37. *Gamma ray bursts and gravitational waves: triggered search strategy in the LIGO science runs*, Soumya D. Mohanty et al, *Class. Quantum Grav.* **21** S765-S774 (2004).
38. *Median Based Line Tracker (MBLT): Model independent and transient preserving line removal from interferometric data*, Soumya D. Mohanty, in Proc. Fourth AMALDI conference, Edited by D. Blair, *Class. Quantum Grav.* **19** 1513-1519 (2002).
39. *Towards a data and detector characterization robot for gravitational wave detectors*, Soumya D. Mohanty, Soma Mukherjee, in Proc. Fourth AMALDI conference, Edited by D. Blair, *Class. Quantum Grav.* **19** 1471-1476 (2002).
40. *Robust test for detecting non-stationarity in data from Gravitational Wave detectors*, Soumya D. Mohanty, *Phys. Rev. D* **61** 122002 (2000).
41. *A Likelihood based scheme for estimating and limiting rates in coincidence analysis*, Soma Mukherjee, Soumya D. Mohanty, *IJMP-D* **9**, No. 3, 337-340 (2000).
42. *A robust test for detecting non-stationarity*, Soumya D. Mohanty, AIP conference proceedings no. 523 (Melville, New York), (2000).
43. *A likelihood based scheme for coincidence analysis*, Soma Mukherjee, Soumya D. Mohanty, AIP conference proceedings no. 523 (Melville, New York) (2000).
44. *LIGO End-to-End Simulation Program*, B. Bhawal et al (including Soumya D. Mohanty), AIP conference proceedings no. 523, pp. 469-470 (Melville, New York) (2000).
45. *Towards Gravitational Wave detection*, L.S.Finn et al (including Soumya D. Mohanty), AIP conference proceedings no. 523 (Melville, New York) (2000).
46. *Detecting an association between Gamma Ray and Gravitational Wave Bursts*, L. S. Finn, Soumya D. Mohanty, J. Romano, *Phys. Rev. D (Rapid Communications)* **60** 121101 (1999).
47. *A data analysis approach for detecting gravitational waves from PSR 0437-4715*, Soumya D. Mohanty et al, *Monthly Notices of the Royal Astronomical Society* **301** 469 (1998).
48. *Hierarchical search strategy for the detection of gravitational waves from coalescing binaries: Extension to post-Newtonian waveforms*, Soumya D. Mohanty, *Phys. Rev. D* **57** 630 (1998).
49. *Gravitational waves from coalescing binaries: A hierarchical signal detection strategy*, S. D. Mohanty, S. V. Dhurandhar, Proc. of the workshop: *Mathematical Aspects of theories of gravitation*, (Feb 96, Warsaw, Poland), Banach Center Publications, Polish Academy of Sciences, Institute of Mathematics **41** Part II, 221 (1997).
50. *Hierarchical search strategy for the detection of gravitational waves from coalescing binaries*, Soumya D. Mohanty, S.V.Dhurandhar, *Phy. Rev. D* **54** 7108 (1996).



51. *Implementation and testing of the first prompt search for gravitational wave transients with electromagnetic counterparts*, (Soumya D. Mohanty in) The LIGO Scientific Collaboration and Virgo Collaboration, *Astron Astrophys* **539** A124 (2012).♣
52. *Search for gravitational-wave bursts associated with gamma-ray bursts using data from LIGO Science Run 5 and Virgo Science Run 1*, (Soumya D. Mohanty in) B. P. Abbott et al., *ApJ* **715** 1438 (2010).♣
53. *All-sky search for gravitational-wave bursts in the first joint LIGO-GEO-Virgo run*, (Soumya D. Mohanty in) J. Abadie et al. (The LIGO Scientific Collaboration and The Virgo Collaboration), *Phys. Rev. D* **81** 102001 (2010).♣
54. *Search for gravitational-wave bursts in the first year of the fifth LIGO science run*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **80** 102001 (2009).♣
55. *Search for gravitational waves associated with 39 gamma-ray bursts using data from the second, third, and fourth LIGO runs*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **77** 062004 (2008).♣
56. *First joint search for gravitational-wave bursts in LIGO and GEO 600 data*, (Soumya D. Mohanty in) B Abbott et al, *Class. Quantum Grav.* **25** 245008 (2008).♣
57. *All-sky search for periodic gravitational waves in LIGO S4 data*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **77** 022001 (2008).♣
58. *Astrophysically triggered searches for gravitational waves: status and prospects*, B. Abbott et al. (LVC), *Class. Quantum Grav.* **25** 114051 (2008).♣
59. *Searches for periodic gravitational waves from unknown isolated sources and Scorpius X-1: Results from the second LIGO science run*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **76** 082001 (2007).♣
60. *Search for gravitational-wave bursts in LIGO data from the fourth science run*, (Soumya D. Mohanty in) B Abbott et al, *Class. Quantum Grav.* **24** 5343 (2007).♣
61. *Search for gravitational waves associated with the gamma ray burst GRB030329 using the LIGO detectors*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **72** 042002 (2005).♣
62. *Upper limits on gravitational wave bursts in LIGO's second science run*, (Soumya D. Mohanty in) B. Abbott et al. (The LIGO Scientific Collaboration), *Phys. Rev. D* **72** 062001 (2005).♣
63. *First all-sky upper limits from LIGO on the strength of periodic gravitational waves using the Hough transform*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **72** 102004 (2005).♣

64. *First upper limits from LIGO on gravitational wave bursts*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **69** 102001 (2004).✱
65. *All-sky search for periodic gravitational waves in the full S5 LIGO data*, (Soumya D. Mohanty in) J. Abadie et al. (The LIGO Scientific Collaboration, The Virgo Collaboration), *Phys. Rev. D* **85** 022001 (2012).
66. *Search for gravitational waves from low mass compact binary coalescence in LIGO's sixth science run and Virgo's science runs 2 and 3*, (Soumya D. Mohanty in) J. Abadie et al. (LIGO Scientific Collaboration, Virgo Collaboration), *Phys. Rev. D* **85** 082002 (2012).
67. *First Low-Latency LIGO+Virgo Search for Binary Inspirals and their Electromagnetic Counterparts*, (Soumya D. Mohanty in) J. Abadie et al., *Astron Astrophys* **541** A155 (2012).
68. *Upper limits on a stochastic gravitational-wave background using LIGO and Virgo interferometers at 600–1000 Hz*, (Soumya D. Mohanty in) J. Abadie et al. (LIGO Scientific Collaboration, Virgo Collaboration), *Phys. Rev. D* **85** 122001 (2012).
69. *Implications for the Origin of GRB 051103 from LIGO Observations*, (Soumya D. Mohanty in) J. Abadie et al., *ApJ* **755** 2 (2012).
70. *Search for gravitational waves from intermediate mass binary black holes*, (Soumya D. Mohanty in) J. Abadie et al. (LIGO Scientific Collaboration, Virgo Collaboration), *Phys. Rev. D* **85** 102004 (2012).
71. *All-sky search for gravitational-wave bursts in the second joint LIGO-Virgo run*, (Soumya D. Mohanty in) J. Abadie et al. (The LIGO Scientific Collaboration, The Virgo Collaboration), *Phys. Rev. D* **85** 122007 (2012).
72. *Search for gravitational waves associated with gamma-ray bursts during LIGO science run 6 and Virgo science run 2 and 3*, (Soumya D. Mohanty in) J. Abadie et al., *ApJ* **760** 12 (2012).
73. *Search for gravitational waves associated with the August 2006 timing glitch of the Vela pulsar*, (Soumya D. Mohanty in) J. Abadie et al. (The LIGO Scientific Collaboration), *Phys. Rev. D* **83** 042001 (2011).
74. *Search for Gravitational Wave Bursts from Six Magnetars*, (Soumya D. Mohanty in) J. Abadie et al., *ApJ* **734** L35 (2011).
75. *Search for gravitational waves from binary black hole inspiral, merger, and ringdown*, (Soumya D. Mohanty in) J. Abadie et al. (LIGO Scientific Collaboration, Virgo Collaboration), *Phys. Rev. D* **83** 122005 (2011).
76. *Beating the spin-down limit on gravitational wave emission from the Vela pulsar*, (Soumya D. Mohanty in) J. Abadie et al., *ApJ* **737** 93 (2011).

77. *A gravitational wave observatory operating beyond the quantum shot-noise limit*, (Soumya D. Mohanty in) The LIGO Scientific Collaboration, *Nature Physics* **7** 962-965 (2011).
78. *Directional Limits on Persistent Gravitational Waves Using LIGO S5 Science Data*, (Soumya D. Mohanty in) J. Abadie et al. (LIGO Scientific Collaboration, Virgo Collaboration), *Phys. Rev. Lett.* **107** 271102 (2011).
79. *All-sky search for gravitational-wave bursts in the first joint LIGO-GEO-Virgo run*, (Soumya D. Mohanty in) J. Abadie et al. (The LIGO Scientific Collaboration and The Virgo Collaboration), *Phys. Rev. D* **81** 102001 (2010).
80. *Searches for gravitational waves from known pulsars with S5 LIGO data*, (Soumya D. Mohanty in) B. P. Abbott et al., *ApJ* **713** 671 (2010).
81. *Search for gravitational-wave inspiral signals associated with short Gamma-Ray Bursts during LIGO's fifth and Virgo's first science run*, (Soumya D. Mohanty in) J. Abadie et al., *ApJ* **715** 1453 (2010).
82. *Predictions for the rates of compact binary coalescences observable by ground-based gravitational-wave detectors*, (Soumya D. Mohanty in) J Abadie et al, *Class. Quantum Grav.* **27** 173001 (2010).
83. *Search for gravitational waves from compact binary coalescence in LIGO and Virgo data from S5 and VSRI*, (Soumya D. Mohanty in) J. Abadie et al. (LIGO Scientific Collaboration, Virgo Collaboration), *Phys. Rev. D* **82** 102001 (2010).
84. *First search for gravitational waves from the youngest known neutron star*, (Soumya D. Mohanty in) J. Abadie et al., *ApJ* **722** 1504 (2010).
85. *Calibration of the LIGO Gravitational Wave Detectors in the Fifth Science Run*, (Soumya D. Mohanty in) J. Abadie et al., *Nucl. Instrum. Meth.* **A624** 223 (2010).
86. *Einstein@Home search for periodic gravitational waves in LIGO S4 data*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **79** 022001 (2009).
87. *An upper limit on the stochastic gravitational-wave background of cosmological origin*, (Soumya D. Mohanty in) The LIGO Scientific Collaboration & The Virgo Collaboration, *Nature* **460** 990-994 (20 August 2009).
88. *LIGO: the Laser Interferometer Gravitational-Wave Observatory*, (Soumya D. Mohanty in) B P Abbott et al, *Rep. Prog. Phys.* **72** 076901 (2009).
89. *All-Sky LIGO Search for Periodic Gravitational Waves in the Early Fifth-Science-Run Data*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. Lett.* **102** 111102 (2009).
90. *Search for gravitational waves from low mass binary coalescences in the first year of LIGO's S5 data*, (Soumya D. Mohanty in) B.

- P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **79** 122001 (2009).
91. *First LIGO search for gravitational wave bursts from cosmic (super)strings*, (Soumya D. Mohanty in) B. P. Abbott et al. (The LIGO Scientific Collaboration), *Phys. Rev. D* **80** 062002 (2009).
  92. *Stacked Search for Gravitational Waves from the 2006 SGR 1900+14 Storm*, (Soumya D. Mohanty in) B. P. Abbott et al., *ApJ* **701** L68 (2009).
  93. *Search for gravitational-wave bursts in the first year of the fifth LIGO science run*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **80** 102001 (2009).
  94. *Search for gravitational wave ringdowns from perturbed black holes in LIGO S4 data*, (Soumya D. Mohanty in) B. P. Abbott et al. (The LIGO Scientific Collaboration), *Phys. Rev. D* **80** 062001 (2009).
  95. *Einstein@Home search for periodic gravitational waves in early S5 LIGO data*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **80** 042003 (2009).
  96. *Observation of a kilogram-scale oscillator near its quantum ground state*, (Soumya D. Mohanty in) B. P. Abbott et al., *New J. Phys.* **11** 073032 (2009).
  97. *Search for gravitational waves from low mass compact binary coalescence in 186 days of LIGO's fifth science run*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **80** 047101 (2009).
  98. *A joint search for gravitational wave bursts with AURIGA and LIGO*, (Soumya D. Mohanty in) L. Baggio et al., *Class. Quantum Grav.* **25** 095004 (2008).
  99. *Search of S3 LIGO data for gravitational wave signals from spinning black hole and neutron star binary inspirals*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **78** 042002 (2008).
  100. *Search for gravitational waves from binary inspirals in S3 and S4 LIGO data*, (Soumya D. Mohanty in) B. P. Abbott et al. (The LIGO Scientific Collaboration), *Phys. Rev. D* **77** 062002 (2008).
  101. *Implications for the Origin of GRB 070201 from LIGO Observations*, (Soumya D. Mohanty in) B. P. Abbott et al., *ApJ* **681** 1419 (2008).
  102. *Beating the Spin-Down Limit on Gravitational Wave Emission from the Crab Pulsar*, (Soumya D. Mohanty in) B. P. Abbott et al., *ApJ* **683** L45 (2008).
  103. *Search for Gravitational-Wave Bursts from Soft Gamma Repeaters*, (Soumya D. Mohanty in) B. P. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. Lett.* **101** 211102 (2008).

104. *Search for gravitational wave radiation associated with the pulsating tail of the SGR 1806-20 hyperflare of 27 December 2004 using LIGO*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **76** 062003 (2007).
105. *Upper limits on gravitational wave emission from 78 radio pulsars*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **76** 042001 (2007).
106. *Searching for a Stochastic Background of Gravitational Waves with the Laser Interferometer Gravitational-Wave Observatory*, (Soumya D. Mohanty in) B. Abbott et al., *ApJ* **659** 918 (2007).
107. *Upper limit map of a background of gravitational waves*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **76** 082003 (2007).
108. *First cross-correlation analysis of interferometric and resonant-bar gravitational-wave data for stochastic backgrounds*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration and ALLEGRO Collaboration), *Phys. Rev. D* **76** 022001 (2007).
109. *Search for gravitational waves from binary black hole inspirals in LIGO data*, (Soumya D. Mohanty in) B. Abbott et al (LIGO Scientific Collaboration), *Phys. Rev. D* **73** 062001 (2006).
110. *Joint LIGO and TAMA300 search for gravitational waves from inspiralling neutron star binaries*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration, TAMA Collaboration), *Phys. Rev. D* **73** 102002 (2006).
111. *Search for gravitational-wave bursts in LIGO's third science run*, (Soumya D. Mohanty in) B. Abbott et al, *Class. Quantum Grav.* **23** S29 (2006).
112. *Upper limits from the LIGO and TAMA detectors on the rate of gravitational-wave bursts*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration, TAMA Collaboration), *Phys. Rev. D* **72** 122004 (2005).
113. *Search for gravitational waves from galactic and extra-galactic binary neutron stars*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **72** 082001 (2005).
114. *Search for gravitational waves from primordial black hole binary coalescences in the galactic halo*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. D* **72** 082002 (2005).
115. *Limits on Gravitational-Wave Emission from Selected Pulsars Using LIGO Data*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. Lett.* **94** 181103 (2005).
116. *Upper Limits on a Stochastic Background of Gravitational Waves*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), *Phys. Rev. Lett.* **95** 221101 (2005).
117. *The LIGO Scientific Collaboration, Detector description and performance for the first coincidence observations between LIGO and GEO*, (Soumya D. Mohanty in) B. Abbott et al., *Nuclear*

Instruments and Methods in Physics Research Section A:  
Accelerators, Spectrometers, Detectors and Associated Equipment  
**517** 154-179 (2004).

118. *Analysis of LIGO data for gravitational waves from binary neutron stars*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), Phys. Rev. D **69** 122001 (2004).
119. *Setting upper limits on the strength of periodic gravitational waves from PSR J1939+2134 using the first science data from the GEO 600 and LIGO detectors*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), Phys. Rev. D **69** 082004 (2004).
120. *Analysis of first LIGO science data for stochastic gravitational waves*, (Soumya D. Mohanty in) B. Abbott et al. (LIGO Scientific Collaboration), Phys. Rev. D **69** 122004 (2004).
121. *Status of GEO 600*, (Soumya D. Mohanty in) B Willke et al, Class. Quantum Grav. **21** S417-S423 (2004).
122. *A report on the status of the GEO 600 gravitational wave detector*, (Soumya D. Mohanty in) M.Hewitson et al, Class. Quantum Grav. **20** S581-S591 (2003).
123. *Detector characterization in GEO 600*, (Soumya D. Mohanty in) A.M.Sintes et al, Class. Quantum Grav. **20** S731-S739 (2003).
124. *The GEO 600 Gravitational Wave detector*, (Soumya D. Mohanty in) Benno Willke et al, in Proc. Fourth AMALDI conference, Edited by D. Blair, Class. Quantum Grav. **19** (2002).
125. *GEO600 data acquisition and detector characterization*, (Soumya D. Mohanty in) Karsten Kötter et al, in Proc. Fourth AMALDI conference, Edited by D. Blair, Class. Quantum Grav. **19** (2002).

#### **LIGO project Technical Reports (Selected from a total of 28)**

1. *A formalism for simulating the Seismic isolation/Suspension system in the LIGO end-to-end model*, S. D. Mohanty, LIGO project Internal report T990014.
2. *GEO++ online detector characterization system*, LIGO project internal report G020382-00-Z.
3. *Intersite Environmental Correlations: E3 and E4 investigations*, LIGO project internal report G010396-00-Z.
4. *End to End simulation program for gravitational wave detectors*, LIGO project internal report P000018-00-E.
5. *External Trigger(s) News*, LIGO Project internal report G010340-00-D.

## **Conference and workshop presentations**

1. S. D. Mohanty, "Detection and Estimation of Unmodeled Chirps," invited plenary talk, 3<sup>rd</sup> Meeting of the Thematic Network of

Black Holes and Gravitational Waves, Playa del Carmen, Mexico (Nov 2018).

2. M. Normandin, S. D. Mohanty (presenter), "Overcoming the computational bottleneck in coherent searches for gravitational waves from binary inspirals," Poster presentation, Texas Advanced Computing Center (TACC) Symposium for Texas Researchers (TACCSTER 2018), Austin, USA (Sep 20-21, 2018).
3. S. D. Mohanty, "Detection and estimation of unmodeled chirps," 26th European Signal Processing Conference (EUSIPCO), Rome, Italy (Sep 2018).
4. S. D. Mohanty, "Sparsity regularization for supernova signals with diffuse time-frequency signatures," Invited talk, Towards Gravitational-Wave Astronomy of core-collapse SuperNovae (GWASNe 2018), National Astronomical Observatory of Japan (January 2018).
5. S. D. Mohanty, "Multi-messenger Astronomy with SKA and LSST: Supermassive Black Hole Binaries," Poster presentation, Fundamental Physics with SKA, Flic-En-Flac, Mauritius (May 2017).
6. Y. Wang (presenter), S. D. Mohanty, Yi-Qian Qian, "Maximization and marginalization statistics for detecting continuous gravitational waves in pulsar timing arrays," Poster presentation, 11<sup>th</sup> international LISA symposium, Zurich, Switzerland (Sep 2016).
7. S. D. Mohanty, "Detection and Estimation of Unmodeled Narrowband Nonstationary Signals," Poster presentation, Gravitational Wave Physics and Astronomy Workshop (GWPAW'15), Osaka, Japan (June 2015).
8. S. D. Mohanty, "Detection and estimation of unmodeled narrowband nonstationary signals: an application of Particle Swarm Optimization in Gravitational Wave data analysis", Poster presentation, Genetic and Evolutionary Computation Conference (GECCO'14), Vancouver BC, Canada (July 2014).
9. S. D. Mohanty, "Meeting the Detection and Estimation Challenge of Un-modeled Narrowband Transient Gravitational Wave Signals", Contributed talk, XXVII Texas Symposium on Relativistic Astrophysics, Dallas, USA (Dec 2013).
10. S. D. Mohanty, "Narrowband Gravitational Wave Transients: Regression Spline Approach To Detection And Estimation", Contributed talk, First TOROS International Workshop, Salta, Argentina (Jun 2013)
11. S. D. Mohanty, "Teaching introductory Physics using commercial off-the-shelf video games", Invited talk, Ahead of the future 2011, Brownsville, USA (Oct 2011).
12. M. Normandin, S. D. Mohanty, "Bayesian approach to multi-messenger astronomy: population study of Gamma Ray Bursts", Poster presentation, Amaldi-9, Cardiff, U.K. (July 2011).
13. M. Normandin, S. D. Mohanty, "Bayesian approach to multi-messenger astronomy: population study of Gamma Ray Bursts",

Poster presentation, Gravitational Wave Physics and Astronomy Workshop (GWPAW), Milwaukee, USA (Jan 2011).

14. S. D. Mohanty, "Gravitational Waves", Invited Plenary speaker, 25<sup>th</sup> meeting of the Indian Association for General Relativity and Gravitation (IAGRG), Saha Institute of Nuclear Physics, Kolkata, India (Jan 2009).
15. S. D. Mohanty, "Sampling theory and matched filtering", Poster presentation, GWDAW-12, Boston, USA (Dec 2007).
16. R. K. Nayak, S. D. Mohanty, A. Jimenez, "Application of Tomographic reconstruction to LISA MLDC-2", Poster presentation, Amaldi-7, Sydney, Australia (July 2007).
17. S. D. Mohanty, "Galactic Binaries: A global view of data analysis techniques", Invited talk, LISA Science Analysis Workshop, Baltimore, Maryland (June 2006).
18. S. D. Mohanty, "Population study of Gamma Ray Bursts", Contributed talk, 10<sup>th</sup> Gravitational Wave Data Analysis workshop (GWDAW-10), Brownsville, USA (Dec 2005).
19. S. D. Mohanty, "Gamma Ray Burst triggered searches using S2, S3, S4 data", Invited talk, Data Analysis Plenary session, LIGO Science Collaboration meeting, MIT (Nov 2005)
20. S. D. Mohanty, "Population study of Gamma Ray Bursts: status and Preliminary results", Invited talk, Data Analysis Plenary session, LIGO Science Collaboration meeting, Livingston, LA (Aug 2005).
21. S. D. Mohanty, "Improving the sensitivity of searches for an association between Gamma Ray Bursts and Gravitational Waves", Contributed talk, GWDAW-9, Annecy, France (Dec 2004).
22. S. D. Mohanty, A. Jimenez, "Progress in non-parametric change point detection of gravitational wave bursts: the MULTIKSCD algorithm", Poster presentation, GWDAW-9, Annecy, France (Dec 2004).
23. S. D. Mohanty, S. Mukherjee, R. Rahkola, Sz. Marka, R. Frey, "Search algorithm for a gravitational wave signal in association with Gamma Ray Burst GRB030329 using the LIGO detectors", Contributed talk, GWDAW-8, Milwaukee, USA (Dec 2003).
24. S. D. Mohanty, "Beyond the Gaussian, stationary assumption: Data analysis techniques for real data", Invited talk, Inaugural meeting of the Center for Gravitational Wave Astronomy, University of Texas at Brownsville, USA (Dec 2003).
25. S. D. Mohanty, "Gamma ray bursts and gravitational waves: triggered search strategy in the LIGO science runs", Contributed talk, Fifth AMALDI conference, Terenia, Italy (July 2003).
26. S. D. Mohanty, "Change point detection of burst signals in the time frequency plane", Invited talk, Joint BURST 2003/5<sup>th</sup> EU Network meeting, Orsay, France (May 2003).



27. S. D. Mohanty, "Controlling burst detection confidence in uncharacterized noise", Contributed talk, GWDAAW-7, Kyoto, Japan (Dec 2002).
28. S. D. Mohanty, S. Mukherjee, "Data and Detector Characterization Robot", Contributed talk, LIGO Science Collaboration meeting, Livingston, Louisiana (Mar 2002).
29. S. D. Mohanty, "Median Based Line Tracker", GWDAAW-6, Trento, Italy (Dec 2001).
30. S. D. Mohanty, "Detecting bursts without accurate noise modeling", Invited talk, BURSTS'99 workshop, Albert Einstein Institute (Nov 1999); LIGO Science Collaboration meeting (1999), Stanford University, USA.
31. S. D. Mohanty, L.S. Finn, J. Romano, "Detecting an association between Gamma ray and Gravitational wave bursts", Poster presentation, Centennial meeting of the American Physical Society (1999), Atlanta, and GWDAAW-3 (Nov 1998), Pennsylvania State University, USA.
32. S. D. Mohanty, "Scaling laws for post-Newtonian chirps", Contributed talk, International Conference on Gravitation and Cosmology~(ICGC) workshop on Gravitational waves, (Dec 1995), Pune, India.
33. S. D. Mohanty, S. V. Dhurandhar, "Hierarchical detection strategy for coalescing binary signals", contributed talk, (pre-ICGC) workshop on Gravitational waves (Dec 1995), Pune, India.

## Seminars, Colloquia, Academic visits and Conferences attended

1. Invited lecture series, "Swarm intelligence methods for statistical regression," Huazhong University of Science and Technology, Wuhan, China (Mar 2019).
2. "Challenges in gravitational wave data analysis," Invited seminar, Dept. of Physics, Huazhong University of Science and Technology, Wuhan, China (Mar 2019).
3. Invited Lecture series on gravitational wave data analysis, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China, Feb 17-Mar 8 (2019).
4. Invited Lecturer, *5th International Winter School on Big Data (BigDat 2019)*, Cambridge University, UK, Jan 7-11 (2019); Organized by University of Cambridge, Cambridge Big Data, and IRDTA Brussels/London. Course Title: *Swarm Intelligence Methods for Statistical Regression*.
5. Invited attendee, Xiangshan science conference on TianQin project and International Collaboration, Guangzhou, China (Sep 26-28, 2018).

6. "Overcoming data analysis challenges with Particle Swarm Optimization," Invited seminar, Huazhong University of Science and Technology, Wuhan, China (June 2018).
7. Invited Lecture series on gravitational wave data analysis, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China, June 4-18 (2018).
8. Invited Lecture series on gravitational wave data analysis, Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing, China, Dec 3-9 (2017).
9. "Challenges in Gravitational Wave Data Analysis," Invited seminar, The Kavli Institute for Astronomy and Astrophysics at Peking University, Beijing, China (Dec 2017).
10. "Challenges in Gravitational Wave Data Analysis," Invited seminar, Yau Mathematical Sciences Center, Tsinghua University, Beijing, China (Dec 2017).
11. "Challenges in Gravitational Wave Data Analysis," Invited seminar, Wuhan University, Wuhan, China (Dec 2017).
12. "Challenges in Gravitational Wave Data Analysis," Invited seminar, Huazhong University of Science and Technology, Wuhan, China (Dec 2017).
13. "Swarm Intelligence Methods and Optimization Problems in Big Data Analytics," Invited seminar, Dept. of Engineering, Univ. of Sannio at Benevento, Italy (Feb 2017).
14. Invited Lecturer, *3rd International Winter School on Big Data (BigDat 2017)*, Bari, Italy, February 13-17 (2017); Organized by University of Bari "Aldo Moro", and Rovira i Virgili University. Course Title: *Swarm Intelligence Methods and Optimization Problems in Big Data Analytics*.
15. "Gravitational Wave Astronomy," Invited colloquium, Dept. of Physics, University of North Texas (Nov 2016).
16. Gravitational Wave Physics and Astronomy Workshop (GWPAW'16), Cape Cod, Hyannis (June 2016).
17. Invited Lecturer, *International Summer School of Science, Modern Information and Communication Technologies in Industry Applications*, Visiting International Professors Program, L. N. Gumilyov Eurasian National University, Astana, Kazakhstan (2014).
18. *Imaging the Gravitational Wave sky*, Invited colloquium, Dept. of Earth Sciences and Dept. of Physics and Astronomy, University of Western Ontario, Canada (Sep 2010).
19. Invited lecturer, *Summer school on gravitational astronomy*, Yunnan University, Kun Ming, China (July 2009).
20. *The search for gravitational waves: status and prospects*, Invited institute Colloquium, Saha Institute of Nuclear Physics, Kolkata, India (July 2008).

21. *Gravitational wave data analysis with and without priors*, Seminar, Raman Research Institute, Bangalore, India (July 2008).
22. *Priors in Gravitational wave detection*, Seminar and academic visit, Inter-University Center for Astronomy and Astrophysics, Pune, India (July 2008).
23. *Imaging the gravitational wave sky*, Invited institute colloquium, Indian Institute of Science Education and Research (IISER), Kolkata, India (July 2008).
24. *Interfacing GW and electromagnetic observations*, Invited institute colloquium, IISER, Kolkata, India (July 2008).
25. Invited lecturer, *Summer school in gravitational waves and numerical relativity*, Morningside center of Mathematics and AMSS: Chinese academy of sciences, Beijing, China (June 2008).
26. 7<sup>th</sup> LISA Symposium, Barcelona, Spain (June 2008).
27. Schutzfest: Festschrift on the occasion of the 60<sup>th</sup> Birthday of Prof. Bernard F. Schutz, Santorini, Greece (Aug 2006). Chair of data analysis session.
28. 6<sup>th</sup> LISA symposium, NASA Goddard Space Flight Center, Baltimore, Maryland (June 2006).
29. 6<sup>th</sup> Amaldi conference (Amaldi 6), Okinawa, Japan (June 2005).
30. Statistics for Gravitational Wave Astronomy (GravStat), Pennsylvania State University (May 2005)
31. 5<sup>th</sup> LISA symposium, Noordwijk, Netherlands (July, 2004)
32. Academic Visit, Albert Einstein institut, Max Planck Institut fuer Gravitationsphysik, Golm, Germany (July 1 - 31, 2004)
33. Seminar, University of Florida, Gainesville (Jan 2004)
34. Beaming and Jets in Gamma Ray Bursts, NORDITA, Copenhagen (2002)
35. Fourth Edoardo Amaldi conference, Perth, Australia (2001)
36. Theoretical Astrophysics Seminar, University of Florida, Gainesville (Dec 2000)
37. 7<sup>th</sup> Course: Current Topics in Astrofundamental Physics, International School of Astrophysics "D. Chalonge", Erice-Sicily (1999). (NATO ASI.)
38. Academic visit, Albert Einstein institut, Max Planck Institut fuer Gravitationsphysik, Golm, Germany (Nov 1999).
39. "Problems in Gravitational Wave Data Analysis", Relativity Seminar, Center for Gravitational Physics and Geometry, Pennsylvania State University (1999).
40. Third Eduardo Amaldi Conference, Caltech, Pasadena (1999).
41. "Gamma Ray Bursts and their Afterglows", ITP, Santa Barbara (1999).

42. Academic visit (part of PhD project) University of Western Australia, Perth (1997).