

Marc Favata

Department of Physics & Astronomy
Montclair State University
1 Normal Avenue
Montclair, NJ 07043
montclair.edu/physics-astronomy

marc.favata@montclair.edu
montclair.edu/favata
office phone: (973)-655-4406
Fax: (973)-655-7686

EDUCATION

Ph.D., Astrophysics, August 2006
M.S., Astrophysics, May 2004
Cornell University, Ithaca, NY
Thesis Advisor: Eanna É. Flanagan

B.S., Physics, with honors, June 2000
California Institute of Technology, Pasadena, CA
Research Advisor: Kip S. Thorne

RESEARCH INTERESTS

Primary interests: gravitational-wave astronomy, theoretical astrophysics, general relativity, the physics of black holes and neutron stars.

Secondary interests: cosmology, nonlinear dynamics, techniques in applied math, geophysics, planetary science

Specific interests: modeling the relativistic two-body problem via the post-Newtonian approximation or black hole perturbation theory; interface of analytic methods with numerical relativity; the gravitational self-force problem; neutron star structure and oscillations; spin and tidal interactions; nonlinear processes in black hole collisions and gravitational-wave generation; parameter estimation for gravitational-wave signals; detection of gravitational waves with current and future detectors; alternative theories of gravity and tests of general relativity; astrophysical and electromagnetic implications of gravitational-wave emission, including black hole kicks.

ACADEMIC EMPLOYMENT & AFFILIATIONS

- Department Chairperson, Dept. of Physics & Astronomy, Montclair State University, 07/2019 - present
- Associate Professor of Physics, Dept. of Physics & Astronomy, Montclair State University, 09/2017 - present
- Simons Fellow in Theoretical Physics, August 2018 - August 2019
- Visiting Associate in Theoretical Physics, California Institute of Technology, 01/2019 - 04/2019
- Visiting Scientist, Max Planck Institute for Gravitational Physics, Potsdam, Germany, 04/2019 - 07/2019
- KITP Scholar, Kavli Institute for Theoretical Physics, UCSB, 2014 - 2017
- Assistant Professor of Physics, Dept. of Mathematical Sciences, Montclair State University, 09/2012 - 08/2017
- Visiting Scientist, Theoretical Astrophysics Group, Caltech, 2009 - 2016
- Postdoctoral Research Associate, LIGO Group, Center for Gravitation & Cosmology, Univ. of Wisconsin, Milwaukee, 09/2011 - 08/2012
- NASA Postdoctoral Fellow, Jet Propulsion Laboratory, Caltech, 08/2009 - 09/2011
- Postdoctoral Fellow, Kavli Institute for Theoretical Physics, UCSB, 09/2006 - 08/2009
- Research and Teaching Assistant, Cornell University, 08/2000 - 08/2006
- Graduate Fellow, Kavli Institute for Theoretical Physics, UCSB, 09/2002 - 12/2002
- Summer Research Fellowships and Teaching Assistant, Caltech, 09/1996 - 06/2000

TEACHING
EXPERIENCE

Experience at Montclair State:

Instructor for *PHYS 461/MATH 461/MATH 562–Special and General Relativity*: introduction to general relativity at the level of Hartle; ~ 10 to 13 students (Spring 2014, Fall 2016, 2019, 2021)).

Instructor for *PHYS 480–Astrophysics*: stellar astrophysics at the level of Carroll & Ostlie; ~ 10 students (Fall 2014, 2017, Spring 2021/online).

Instructor for *PHYS 210–Intermediate Mechanics*: mechanics at the level of Taylor; ~ 20 students (Fall 2021/online).

Instructor for *PHYS 280–Astronomy*: introductory astronomy course with lab for physics majors; ~ 12 to 35 students (Fall 2013, 2015; Spring 2020; mixed synch/asynch online course in Winter/Summer sessions).

Instructor for *PHYS 191 & 192–University Physics I & II*: calculus-based introductory physics course focusing on mechanics, oscillations, waves, E & M, and optics; two sections of ~ 24 students, lecture & lab (Fall 2012–2017 & Spring 2013, 2015 – 2018).

Instructor for *MATH 690 (Grad. Indep. Study) & MATH 698 (Master’s Thesis)*: supervised research on gravitational waves for master’s degree students (Fall 2014, Spring 2015, Fall 2017, Spring 2018, Fall 2021).

Instructor for *MATH 497 & PHYS 495–Independent Research*: supervised undergraduate student research on general relativity, gravitational waves, astrophysics, and quantum mechanics (multiple semesters since 2015).

Other teaching experience::

Instructor for *Ph 79: Senior Thesis, Theoretical* (Caltech): Served as senior thesis advisor for undergraduate Gary Binder on a project regarding spin-effects and gravitational waves from inspiraling binaries (09/2010–06/2011).

Instructor for Caltech’s *Ph 171: Reading and Independent Study Course*: Organized readings and homework problems related to gravitational waves & post-Newtonian theory; discussed material with student in weekly meetings (Spring 2010).

Guest Lecturer for UCSB’s *Phys 120: The Physics of California: Waves, Weather, Quakes and Fires*, Prof. Lars Bildsten (Spring 2008).

Head Teaching Assistant for Cornell’s *Astro 102: Our Solar System*: Gave 2 or 3 section lectures per week to groups of ~ 10 –30 undergraduates, developed and graded course problem sets, held office hours, maintained course webpage, & organized TA meetings and responsibilities for one of Cornell’s largest courses (Spring 2003, 2004, & 2006).

Head Teaching Assistant for Cornell’s *Astro 101: The Nature of the Universe*: same responsibilities as Astro 102 above (Fall 2003 & 2005).

Teaching Assistant for Caltech’s *Astronomy 1: The Evolving Universe*: Gave section lectures on introductory general relativity and evaluated student term papers (Spring 2000).

STUDENT
MENTORING

Graduate students:

Advisor for Kevin Johansmeyer, Montclair; gravitational wave sonification web app development (2020-).

Master’s thesis advisor for Matthew Karlson, Montclair; *Gravitational-wave memory from black hole and neutron star mergers*, May 2018; currently PhD student in Applied Math at Pittsburgh U.

Master's thesis advisor for Goran Dojcinoski, Montclair; *Nonlinear gravitational-wave memory from merging binary black holes*, May 2015; (currently adjunct at Bergen Community College & Montclair).

Undergraduate Students/Montclair

Lita de la Cruz, 2015–2018, SHIP student. Project on supernova memory waveforms. Princeton University Bridge Program; currently PhD astrophysics at Rutgers.

Kevin Chen, 2016 - 2018, SHIP student. Project on nonlinear memory waveform comparisons; modeling sounds from stochastic backgrounds. Winner of outstanding graduating physics major award. Currently working in industry.

Nicholas Provost, 2017 - 2018, CS student/indep. study. Developed iOS/Android app on Sounds of Spacetime. Currently employed in industry (programming/web development).

Blake Moore, 2013–2016, SHIP student. Project on eccentric waveforms. Winner of Dalton Astronomy Fellowship and Outstanding Graduating Senior Research Award. PhD in gravitational physics from Montana State University. Currently senior systems engineer at Raytheon.

Nicholas Drywa, 2014–2015; Project on gravitational lensing; modeling Schwarzschild geodesics. MS Physics Stevens Institute of Technology; currently H.S. teacher, River Dell, NJ.

Undergraduate Students/Caltech

Xinyi Guo, SURF student from Pomona College. Project regarding spin effects and non-linear memory in merging black hole binaries; Summer 2011. PhD from Harvard/CfA. Currently at D.E. Shaw.

Gary Binder, SURF student from Caltech. Project on spin-effects in extreme mass ratio inspirals; Summer 2010. PhD UC Berkeley in neutrino physics. Currently researcher at Lawrence Berkeley National.

GRANTS, AWARDS,
& FELLOWSHIPS

- PI, Simons Fellow in Theoretical Physics, *Gravitational-wave science for 3rd generation detectors*, Simons Foundation #554674, 1 August 2018 - 31 July 2019, \$108,000.
- Fulbright Global Scholar Award, 2018 (declined)
- PI, NSF CAREER Award, *CAREER: Research and Education in Gravitational-Wave Science*, NSF PHY-1653374, \$400,000.
- PI, NSF RUI Award, *RUI: Issues in modeling gravitational-wave sources*, NSF PHY-1308527, FY2013-2017, \$126,000.
- KITP Scholar Award; funds three visits to the Kavli Institute for Theoretical Physics, 2014-2017 (~ \$8000).
- Special Breakthrough Prize in Fundamental Physics (2016; shared with 1000+ members of the LIGO-Virgo Collaborations).
- Gruber Cosmology Prize, (2016; shared with 1000+ members of the LIGO-Virgo Collaborations).
- NASA Postdoctoral Fellowship, 2009-2011.
- Kavli Institute for Theoretical Physics (KITP) Postdoctoral Fellow.
- KITP program participant, Physics of Galactic Nuclei, 2006.
- NASA Space Grant Fellow, 2002, 2004-2005.
- KITP Graduate Fellow, Fall 2002.
- Cornell Sage Fellow, 2000-2001.
- Multiple travel grants to attend APS and international conferences, 2000-2012.

SERVICE
& MEMBERSHIPS

- Sons of Italy *National Education & Leadership Award*, 2000.
- Peripall Speaking Award finalist, Caltech SURF program, 1999.
- Referee for *Astrophys. J. Lett.*, *Phys. Rev. Lett.*, *Phys. Rev. D*, *Mon. Not. Royal Astron. Soc.*, *Intern. J. Mod. Phy. A*.
- Regular proposal reviewer for National Science Foundation's Gravitational Physics Division; also panel reviewer.
- Proposal reviewer for Oak Ridge Associated Universities
- Book reviewer for Cambridge University Press, CRC Press.
- Science consultant for the Science and Entertainment Exchange; consultant for TV shows on Syfy Channel, MTV, and film projects.
- External member of PhD thesis committee for Dr. Shilpa Kastha, Institute for Mathematical Sciences, Chennai
- LIGO Scientific Collaboration (LSC) member.
- American Physical Society, life member.
- Einstein Telescope Collaboration member.
- Contributor to the *LISA Science Requirements Document*, v5.x, 2010.
- Anacapa Society (theoretical physics at undergrad institutions), member.
- Caltech Athenaeum faculty club, member.
- Montclair State Service
 - Department Chairperson, Physics & Astronomy (2019-)
 - NJ Space Grant Consortium, MSU Affiliate representative
 - Physics Club, faculty advisor (2019 -)
 - Blue Ribbon Task Force on Core Education (2019-2020)
 - Committee on University Effectiveness (2021 - ??)
 - Physics faculty search committee (chair, 2018-2020)
 - North Jersey Astronomical Group, faculty advisor (2012 -)
 - Dalton Astronomy Scholarship Committee (chair, 2016-)
 - CSAM Research Committee (2015 - 2018)
 - CSAM Facilities Committee (2015 - 2018)
 - University Academic Appeals Committee (alternate; 2015 - 2017)
 - Physics SIG chair (under Math Dept., 2016-2018)
 - Math Department Budget Committee (2017 - 2018)
 - Math Department Website Committee (chair, 2012-2018)
 - Math Department Social Media Committee (2014-2016)
 - Math Department Faculty Search Committee (2015-2016; chair 2016-2017)
 - Math Department Scholarship Committee (2015- 2017)
 - Math Department "Space" Committee (2015-2018)
- LIGO Service
 - Montclair State group founder & PI (2013-)
 - LSC Council (2013-2019)
 - Web Committee (chair, 2016-)
 - EPO Committee (2016 -)
 - CBC Advisory Board (2016-)

CONFERENCES
ORGANIZED

10th Theoretical Astrophysics in Southern California (TASC) Meeting, Caltech, co-organized with Christian Ott and Chris Hirata, (10/29/2010).

2nd Santa Barbara Astrophysics Meeting, KITP, co-organized with Lars Bildsten, Marusa Bradac, and Marton Hidas (05/02/2008).

1st Santa Barbara Astrophysics Meeting, KITP, co-organized with Lars Bildsten, Nairn Baliber, and Phil Marshall (05/04/2007).

6th Theoretical Astrophysics in Southern California (TASC) Meeting, KITP, co-organized with Lars Bildsten and Eric Pfahl (October 20, 2006).

PUBLIC LECTURES
& OUTREACH

- Creator and developer of soundsofspacetime.org, an interactive website to explore the sonification of gravitational-wave signals.
- Creator of GW Resources website, an online list of resources for students and researchers in relativity; www.astro.cornell.edu/favata/gwresources.html.
- “Observing the Universe with Gravitational Waves” Weston Science Scholars Program, Montclair State, July 2021
- “Observing the Universe with Gravitational Waves” Dunworkin Club, Montclair, May 2021
- “The Scientific Legacy of Apollo,” first lecture in MSU’s *Journey to the Moon* series, September 2019
- “Listening to the Universe: detecting ripples in spacetime,” Keynote lecture at River Dell HS STEM Symposium , May 2018
- “Listening to the Universe: detecting ripples in spacetime,” Dunworkin Club, Montclair, February 2018
- “The first detection of gravitational waves by LIGO,” lecture & exhibit booth, CSAM Discovery Day, April 2016
- “The first detection of gravitational waves by LIGO,” Brookdale Community College, April 2016
- “The first detection of gravitational waves by LIGO,” MSU Physics Club, April 2016
- “The first detection of gravitational waves by LIGO,” North Jersey Astronomical Group, April 2016
- “The first detection of gravitational waves by LIGO,” Provost’s Cross Disciplinary Discourse Lunchtime Series, April 2016
- Assisted with LIGO outreach exhibit at the World Science Festival, New York City (May 2015, June 2016).
- Organized LIGO outreach exhibit at the North East Astronomy Forum (NEAF), Rockland Community College (April 2015, 2016).
- “An update on LIGO and the search for gravitational waves,” North Jersey Astronomical Group, (November 2013).
- “The search for black holes & gravitational waves,” Rockland Astronomy Club, (October 2013).
- “The search for black holes & gravitational waves,” Amateur Astronomers, Inc., Union Co. College, NJ (October 2013).
- Lecture on the Solar System to Bradford School 1st grade class, Montclair, (March 2013).
- “The search for black holes & gravitational waves,” Rockland Astronomy Club annual dinner, (February 2013).
- “Gravitational wave astronomy” to North Jersey Astronomical Group, Montclair, (October 2012).

- “Gravitational wave astronomy” to visiting Univ. of Leiden physics students, KITP, (May 2008).
- “Black holes and gravitational waves,” Dos Pueblos High School, Santa Barbara, (May 2007).
- “Black holes and gravitational waves,” Rio Mesa High School, Oxnard (January 2007).
- “Black holes and gravitational waves,” Santa Barbara Museum of Natural History, (November 2006).
- “Relativity: an introduction to space, time, and gravity,” 4-H Focus for Teens Program, Cornell, (June 2002).

CONFERENCE
TALKS,
SEMINARS, &
COLLOQUIA
(*=INVITED)

1. Extreme Gravity session chair, Physics & Astronomy at the Extreme (PAX), Cascina/Virgo, May 2019*
2. Astronomy Colloquium, Seoul National University, September 2018*
3. Physics Colloquium, Ewha Womans University, September 2018*
4. April APS Meeting, Columbus, Ohio (April 2018)
5. Astrophysics Seminar, Rutgers University, New Brunswick, NJ (November 2017)*
6. 12th Amaldi Conference on Gravitational Waves, Pasadena, CA (July 2017)*
7. Strong Gravity and Binary Dynamics with Gravitational Wave Observations, Ole Miss, MS (February 2017)*
8. “April” APS Meeting, Washington DC (January 2017)
9. 21st International Conference on General Relativity and Gravitation, Columbia Univ., NY (July 2016)
10. Gravitational-Wave Physics and Astronomy Workshop, Hyannis, MA (June 2016)
11. April APS Meeting, Salt Lake City, UT (April 2016)
12. LIGO-Virgo Collaboration Meeting, Pasadena, CA (March 2016)
13. 11th Amaldi Conference on Gravitational Waves, Gwangju, S. Korea (June 2015)
14. Meeting of the American Astronomical Society’s Division on Dynamical Astronomy, Caltech (May 2015)*
15. April APS Meeting, Baltimore, MD (April 2015)
16. LIGO-Virgo Collaboration Meeting, Stanford, poster (August 2014)
17. Numerical & Analytical Relativity & Data Analysis (NARDA), Cal State, Fullerton (August 2014)*
18. Frontiers of Neutron Star Astrophysics, Cornell (May 2014)
19. April APS Meeting, Savannah, GA (April 2014)
20. Seminar, International Centre for Theoretical Sciences, Bangalore (July 2013)*
21. Colloquium, International Centre for Theoretical Sciences, Bangalore (July 2013)*
22. Astronomy Dept. Colloquium, Seoul National University (June 2013)*
23. April APS Meeting, Denver, CO (April 2013)
24. LIGO-Virgo Collaboration Meeting, new group presentation (March 2013)
25. Rattle and Shine: Gravitational Wave and Electromagnetic Studies of Compact Binary Mergers, KITP, poster (August 2012)
26. Gravitational Wave Bursts Workshop, Tobermory, Scotland (May 2012)
27. MIT Lincoln Laboratory, group seminar (March 2012)*
28. Mathematical Sciences Dept., Montclair State U. (March 2012)*
29. Physics Dept., Cal State Fullerton (January 2012)*

30. Center for Gravitation & Cosmology Seminar, UW–Milwaukee (November 2011)*
31. 21st Midwest Relativity Meeting, Univ. of Illinois (November 2011)
32. Astrophysics Luncheon Seminar, JPL (June 2011)
33. April APS Meeting, Anaheim, CA (April 2011)
34. 27th Pacific Coast Gravity Meeting, Caltech (March 2011)
35. Applied mathematics colloquium, Northwestern Univ. (November 2010)*
36. The Inns and Outs of Black Holes, Annapolis (November 2010)
37. 10th Theoretical Astrophysics in S. California Meeting, Caltech (October 2010)
38. JPL Postdoc Research Day, poster, JPL (August 2010)
39. 8th International LISA Symposium, SLAC/Stanford (June 2010)
40. Theory Meets Data Analysis (Capra/NRDA), Perimeter Institute (June 2010)
41. 26th Pacific Coast Gravity Meeting, UC San Diego (March 2010)
42. 8th Amaldi Conference on Gravitational Waves, Columbia Univ. (June 2009)
43. 12th Eastern Gravity Meeting, RIT (June 2009)
44. CITA Seminar, Univ. of Toronto (June 2009)*
45. UCSB Astrophysics Lunch Seminar (April 2009)
46. Physics Department Seminar, Univ. of Mississippi (March 2009)*
47. 24th Texas Symposium on Relativistic Astrophysics, Vancouver (December 2008)
48. Theoretical Astrophysics and Relativity seminar, Caltech (December 2008)*
49. 8th Theoretical Astrophysics in S. California Meeting, UC Irvine (November 2008)
50. 7th International LISA Symposium, Barcelona (June 2008)
51. 2nd Santa Barbara Astrophysics Meeting, KITP (May 2008)
52. 24th Pacific Coast Gravity Meeting, UCSB (March 2008)
53. 7th Theoretical Astrophysics in S. California Meeting, UCLA (Nov 2007)
54. UCSB Astrophysics Lunch Seminar (October 2007)
55. 18th International Conference on Gen. Relativity & Gravitation, Sydney (July 2007)
56. 1st Santa Barbara Astrophysics Meeting, KITP (May 2007)
57. 23rd Pacific Coast Gravity Meeting, Caltech (March 2007)
58. UCSB Gravity Lunch Seminar (November 2006)*
59. KITP Program: Physics of Galactic Nuclei, Discussion Talk (July 2006)*
60. Meeting of the American Physical Society, Dallas (April 2006), Session Chair
61. 9th East Coast Gravity Meeting, MIT (March 2006)
62. Center for Gravitational Wave Physics Seminar, Penn State (February 2006)*
63. Meeting of the American Physical Society, Tampa (April 2005)
64. 17th International Conference on Gen. Relativity & Gravitation, Dublin (July 2004)
65. Meeting of the American Physical Society, Denver (May 2004)
66. 20th Pacific Coast Gravity Meeting, Caltech (March 2004)
67. Gravitation: A Decennial Perspective, Penn State (June 2003)
68. Astrophysics of Gravitational Wave Sources, poster, Univ. of Maryland (April 2003)
69. Meeting of the American Physical Society, Philadelphia, (April 2003)
70. 2nd Theoretical Astrophysics in Southern California Meeting, UCSB (October 2002)
71. Meeting of the American Physical Society, Albuquerque (April 2002)
72. 3rd Capra Ranch Meeting on Radiation Reaction, Caltech (June 2000)
73. 14th National Conference on Undergraduate Research, Univ. of Montana (April 2000)

- 74. 16th Pacific Coast Gravity Meeting, Caltech (March 2000)
- 75. SURF Seminar Day, Caltech (October 1999)
- 76. SURF Seminar Day, Caltech (October 1997)

MEDIA COVERAGE
(LINKS IN PDF)

[Experts Weight in on Current Job Market Trends](#), Zippia.com, November 2020.

[What Happens When Black Holes Collide?](#), by David Eicher, Astronomy Magazine, July 2019.

[Montclair State Faculty Member Marc Favata Earns Prestigious Simons Fellowship](#), MSU new release, March 2018; also on [Patch.com](#)

[Shooting for the Stars](#), Crusader Magazine (Bergen Catholic H. S.), Winter 2018 issue.

[Montclair State physicists part of team that detected distant stars colliding](#), by J. M. O'Neill, Bergen Record, Montclair Times, NorthJersey.com, other local papers; October 2017.

[Neutron Star Collision](#), video interview for Jersey Matters, October 2017.

[NJ scientists among team that discovered star collision](#), News12 NJ interview, Oct. 2017.

[Groundbreaking Discovery by LIGO/Virgo Solves Cosmic Mystery](#), MSU news release, October 2017.

[Solving Cosmic Mysteries](#) by Amy Wagner, Montclair Magazine, Fall 2017.

[Neutron Stars Collide](#), Forward Thinking (MSU research newsletter), Fall 2017.

[Listening to the Universe](#), CSAM Insights (MSU research magazine), Fall 2017 Issue.

[LIGO could detect gravitational waves permanent space-time warp](#), quoted in New Scientist article, May 2017.

[Gravitational Waves May Permanently Alter Spacetime](#), quote in NovaNext, October 2016.

[Professor honored with NSF CAREER Award](#), Montclair Magazine, Spring 2017.

[Tales from the Dark Side of the Universe](#), Forward Thinking, Spring 2017.

[Montclair State Professor Earns Grant To Study Waves Of Universe](#), Daily Voice, Feb. 2017.

[Professor Receives Prestigious NSF CAREER Award](#), MSU news release, January 2017.

[Professor Assists in Proving Einstein's Theory Again](#), MSU news release, June 2016. See related story in *Innovation New Jersey*, August 2016.

[A Window into the Cosmos: University scientists among team confirming Einstein's theory of relativity](#), Montclair Magazine, Spring 2016.

[The Revealing Sounds of the Cosmos](#), Forward Thinking, Spring 2016.

[Montclair State University astrophysicist member of group to detect ripple in gravity](#), Bergen Record, Montclair Times, NorthJersey.com; February 2016.

[Scientists find gravitational waves, say Einstein was right](#), quote in The Press of Atlantic City, February 2016.

[LISTEN: Black holes collide, MSU Professor Involved in Scientific Breakthrough](#), Patch.com, February 2016.

[Listening to the Universe: Montclair State professor and students are coauthors on gravitational waves detection paper](#), MSU news release, February 2016.

[Listening to the Universe](#), Forward Thinking, Fall 2013.

[When black holes collide](#), by Steve Nadis, research featured in cover story for Astronomy Magazine, May 2006.

[New study shows how black holes get their kicks](#) RIT press release, February 2004.

[Caltech comes out on top](#), by Ben Wildavsky, interview and photo for cover story in US News and World Report College Rankings Issue, August 1999.

A facility for physics, and just about everything else, by David P. Biggy, interview for Scholar of the Week column, Bergen Record, 2-Jan-1996.

UNDERGRADUATE
RESEARCH

Showed that tidal work in binary systems is invariant under change in how gravitational energy is localized. (Summer 1999, Caltech, advisor: Kip S. Thorne)

Processed scans of photographic plates from Digitized Palomar Observatory Sky Survey. Worked on search for high-redshift quasars. Participated in observing runs at the Palomar 200-inch and 60-inch telescopes. (Summer 1998, Caltech, advisor: S. George Djorgovski)

Studied correlations between accretion torque and flux changes in low-mass x-ray binaries. (Summer 1997, Caltech, advisor: Thomas Prince)

COMPUTER
SKILLS

Proficiency in Maple, LaTeX, HTML; Windows, Mac, Linux OS; MS Office. Knowledgeable in Mathematica, Matlab, C, CSS.

All publications on [Google Scholar](#), [NASA Astrophysics Data Service](#), [arXiv](#).
ORCID ID: [0000-0001-8270-9512](#)

REFEREED
PUBLICATIONS
(NON-LIGO)

M. Favata, C. L. Kim, K. G. Arun, J. C. Kim, & H. W. Lee, *Constraining the orbital eccentricity of inspiralling compact binary systems with Advanced LIGO*, Phys. Rev. D (submitted, 2021); arXiv:2108.05861 [gr-qc]

P. Mahapatra, A. Gupta, M. Favata, K. G. Arun, & B. S. Sathyaprakash, *Remnant black hole kicks and implications for hierarchical mergers*, Astrophys. J. Lett., (under review, 2021); arXiv:2106.07179 [gr-qc]

B. Moore, M. Favata, K. G. Arun, & C. K. Mishra, *Gravitational-wave phasing for low-eccentricity inspiralling compact binaries to 3PN order*, Phys. Rev. D, 93, 124061 (2016); arXiv:1605.00304 [gr-qc]

M. Favata, *Systematic parameter errors in inspiraling neutron star binaries*, Phys. Rev. Lett., 112, 101101 (2014); arXiv:1310.8288 [gr-qc]

N. Andersson et al., *The transient gravitational-wave sky*, Classical Quantum Gravity 30, 193002 (2013); arXiv:1305.0816

B. Sathyaprakash et al., *Scientific Objectives of Einstein Telescope*, Class. Quantum Grav. 29, 124013, (2012); arXiv:1206.0331

M. Favata, *The gravitational-wave memory for eccentric binaries*, Phys. Rev. D, 84, 124013 (2011); arXiv:1108.3121 [gr-qc]

M. Favata, *Conservative corrections to the innermost stable circular orbit (ISCO) of a Kerr black hole: a new gauge-invariant post-Newtonian ISCO condition, and the ISCO shift due to test-particle spin and the gravitational self-force*, Phys. Rev. D, 83, 024028 (2011); arXiv:1010.2553 [gr-qc]

M. Favata, *Conservative self-force correction to the innermost stable circular orbit: comparison with multiple post-Newtonian-based methods*, Phys. Rev. D, 83, 024027 (2011); arXiv:1008.4622 [gr-qc]

M. Favata *The gravitational-wave memory effect*, Class. Quantum Grav., 27, 084036 (2010); arXiv:1003.3486 [gr-qc]

M. Favata, *Nonlinear gravitational-wave memory from binary black hole mergers*, Astrophys. J. Letters, 696, L159, (2009); arXiv:0902.3660 [astro-ph.SR]

M. Favata, *Post-Newtonian corrections to the gravitational-wave memory for quasicircular, inspiralling compact binaries*, Phys. Rev. D 80, 024002, (2009); arXiv:0812.0069 [gr-qc]

M. Favata, *Gravitational-wave memory revisited: memory from the merger and recoil of binary black holes*, J. Phys. Conf. Ser. 154, 012043, (2009) arXiv:0811.3451 [astro-ph]

M. Favata, *Are neutron stars crushed? Gravitomagnetic tidal forces as a mechanism for binary-induced collapse*, Phys. Rev. D, 73, 104005, (2006); astro-ph/0510668

M. Favata, S. A. Hughes, & D. E. Holz, *How black holes get their kicks: gravitational radiation recoil revisited*, Astrophys. J. Letters, 607, L5, (2004); astro-ph/0402056

D. Merritt, M. Milosavljević, M. Favata, S. A. Hughes, & D. E. Holz, *Consequences of*

radiation recoil, *Astrophys. J. Letters*, 607, L9, (2004); astro-ph/0402057

M. Favata, *Energy localization invariance of tidal work in general relativity*, *Phys. Rev. D.*, 63, 064013, (2001); gr-qc/0008061

CONFERENCE
PROCEEDINGS

P. Jaranowski et. al., *Summary of session B3: analytic approximations, perturbation methods and their applications*, in *Proceedings of the GR18 Conference*, *Class. Quantum Grav.*, 25, 114020 (2007); arXiv:0710.5658

S. A. Hughes, M. Favata, & D. E. Holz, *How black holes get their kicks: radiation recoil in binary black hole mergers*, in “*Growing Black Holes: Accretion in a Cosmological Context*,” Edited by A. Merloni, S. Nayakshin, & R. Sunyaev, pg. 333 (2005); astro-ph/0408492

POPULAR
PRESS

M. Favata, *What Happens When Black Holes Collide*, *All About Space Magazine*, Issue 116, pg. 75 (2021).

M. Favata, *A roar, a crash and a major scientific tool that was a piece of New Jersey's roots is gone*, *The Star Ledger*, opinion section guest-columnist, 20 Dec. 2020.

S. A. Hughes, M. Favata, & D. E. Holz, *How black holes get their kicks: radiation recoil in binary black hole mergers*, in “*Growing Black Holes: Accretion in a Cosmological Context*,” Edited by A. Merloni, S. Nayakshin, & R. Sunyaev, pg. 333 (2005); astro-ph/0408492

THESIS

M. Favata, *Kicking Black Holes, Crushing Neutron Stars, and the Validity of the Adiabatic Approximation for Extreme-Mass-Ratio Inspirals*, Ph.D. thesis, Cornell Univ. (Aug. 2006)

LIGO
COLLABORATION
PAPERS

LSC publications on which I am a co-author. For an updated list, see the [Publications of the LIGO and Virgo Collaborations](#).

The LIGO-Virgo Collaboration, *Search for gravitational wave signals associated with gamma-ray bursts during the second observing run of Advanced LIGO and Advanced Virgo*, (submitted 2019); LIGO-P1900034; arXiv:1907.01443.

The LIGO-Virgo Collaboration, *Search for gravitational waves from Scorpius X-1 in the second Advanced LIGO observing run with an improved hidden Markov model*, (submitted 2019); arXiv:1906.12040.

The LIGO-Virgo Collaboration, *Search for intermediate mass black hole binaries in the first and second observing runs of the Advanced LIGO and Virgo network*, (submitted 2019); arXiv:1906.08000.

The LIGO-Virgo Collaboration, *All-sky search for short gravitational-wave bursts in the second Advanced LIGO and Advanced Virgo run*, *Phys. Rev. D* 100, 024017 (2019); arXiv:1905.03457.

The LIGO-Virgo Collaboration, *Search for sub-solar mass ultracompact binaries in Advanced LIGO's second observing run* (submitted 2019); LIGO-P1900037; arXiv:1904.08976.

The LIGO-Virgo Collaboration, *All-sky search for long-duration gravitational wave transients in the second Advanced LIGO observing run*, *Phys. Rev. D* 99, 104033 (2019); LIGO-P1800323; arXiv:1903.12015.

The LIGO-Virgo Collaboration, *Directional limits on persistent gravitational waves using data from Advanced LIGO's first two observing runs*, (submitted 2019); LIGO-P1900053; arXiv:1903.08844.

The LIGO-Virgo Collaboration, *Tests of general relativity with the binary black hole signals*

from the *LIGO-Virgo catalog*, (submitted 2019); LIGO-P1800316; arXiv:1903.04467.

The LIGO-Virgo Collaboration, *Search for the isotropic stochastic background with Advanced LIGO's second observing run*, (submitted 2019); LIGO-P1800248; arXiv:1903.02886.

The LIGO-Virgo Collaboration, *All-sky search for continuous gravitational waves from isolated neutron stars using Advanced LIGO O2 data*, Phys. Rev. D 100, 024004 (2019); LIGO-P1900012; arXiv:1903.01901.

The LIGO-Virgo Collaboration, *Narrow-band search for gravitational waves from known pulsars using the second LIGO observing run*, Phys. Rev. D 99, 122002 (2019); LIGO-P1800391; arXiv:1902.08442.

The LIGO-Virgo Collaboration, et. al, *Searches for gravitational waves from known pulsars at two harmonics in 2015-2017 LIGO data*, Astrophys. J. 879, 10 (2019); LIGO-P1800344; arXiv:1902.08507.

The LIGO-Virgo Collaboration, *Search for transient gravitational wave signals associated with magnetar bursts during Advanced LIGO's second observing run*, Astrophys. J. 874, 163 (2019); LIGO-P1800165; arXiv:1902.01557.

The LIGO-Virgo Collaboration, *Low-latency gravitational-wave alerts for multimessenger astronomy during the second Advanced LIGO and Virgo observing run*, Astrophys. J. 875, 161 (2019); LIGO-P1800255; arXiv:1901.03310.

The LIGO-Virgo and DES Collaborations, *First measurement of the Hubble constant from a dark standard siren using the Dark Energy Survey galaxies and the LIGO/Virgo binary-black-hole merger GW170814*, Astrophys. J. Lett. 876, L7 (2019); arXiv:1901.01540.

The LIGO-Virgo Collaboration, *Searches for continuous gravitational waves from 15 supernova remnants and Fomalhaut b with Advanced LIGO*, Astrophys. J. 875, 122 (2019); LIGO-P1800333; arXiv:1812.11656.

The LIGO-Virgo Collaboration, *GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs* (accepted by PRX, 2019); LIGO-P1800307; arXiv:1811.12907.

The LIGO-Virgo Collaboration, *Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo*, (submitted 2018); LIGO-P1800324; arXiv:1811.12940.

The LIGO-Virgo Collaboration, *Tests of General Relativity with GW170817*, Phys. Rev. Lett. 123, 011102 (2019); LIGO-P1800059; arXiv:1811.00364.

The LIGO-Virgo, ANTARES, and IceCube Collaborations, *Search for multimessenger sources of gravitational waves and high-energy neutrinos with Advanced LIGO during its first observing run*, Astrophys. J. 870, 134 (2019); arXiv:1810.10693.

The LIGO-Virgo Collaboration, *Search for gravitational waves from a long-lived remnant of the binary neutron star merger GW170817*, Astrophys. J. 875, 160 (2019); LIGO-P1800195; arXiv:1810.02581.

The LIGO-Virgo and Fermi-GBM Collaborations, *A Fermi Gamma-ray Burst Monitor search for electromagnetic signals coincident with gravitational-wave candidates in Advanced LIGO's first observing run*, Astrophys. J. 871, 90 (2019); arXiv:1810.02764.

The LIGO-Virgo Collaboration, *Constraining the p -mode- g -mode tidal instability with GW170817*, Phys. Rev. Lett. 122, 061104 (2019); arXiv:1808.08676.

The LIGO-Virgo Collaboration, *Search for sub-solar mass ultracompact binaries in Advanced LIGO's first observing run*, Phys. Rev. Lett. 121, 231103 (2018); LIGO-P1800158; arXiv:1808.04771.

The LIGO-Virgo Collaboration, *GW170817: Measurements of neutron star radii and equation of state*, Phys. Rev. Lett. 121, 161101 (2018); LIGO-P1800115; arXiv:1805.11581

The LIGO-Virgo Collaboration, *Properties of the binary neutron star merger GW170817*, Phys. Rev. X 9, 011001 (2019); LIGO-P1800061; arXiv:1805.11579

The LIGO-Virgo Collaboration, *A Search for Tensor, Vector, and Scalar Polarizations in the Stochastic Gravitational-Wave Background*, Phys. Rev. Lett. 120, 201102 (2018); LIGO-P1700369; arXiv:1802.10194

The LIGO-Virgo Collaboration, *Full Band All-sky Search for Periodic Gravitational Waves in the O1 LIGO Data*, Phys. Rev. D 97, 102003 (2018); LIGO-P1600164; arXiv:1802.05241

The LIGO-Virgo Collaboration, *Constraints on cosmic strings using data from the first Advanced LIGO observing run*, Phys. Rev. D 97, 102002 (2018); LIGO-P1700051; arXiv:1712.01168

The LIGO-Virgo Collaboration, *All-sky search for long-duration gravitational wave transients in the first Advanced LIGO observing run*, Class. Quantum Grav. 35, 065009 (2018); LIGO-P1600277; arXiv:1711.06843

The LIGO-Virgo Collaboration, *GW170608: Observation of a 19-solar-mass Binary Black Hole Coalescence*, ApJ Lett. 851, L35 (2017); LIGO-P170608; arXiv:1711.05578

The LIGO-Virgo Collaboration, *Gravitational-wave Search for a Post-Merger Remnant of the Binary Neutron Star Merger GW170817*, Astrophys. J. Lett. 851, L16 (2017); LIGO-P17000318; arXiv:1710.09320

The ANTARES, IceCube, Pierre Auger, LIGO and Virgo Collaborations, *Search for High-energy Neutrinos from Binary Neutron Star Merger GW170817 with ANTARES, IceCube, and the Pierre Auger Observatory*, Astrophys. J. Lett. 850, L35 (2017); LIGO-P1700344; arXiv:1710.05839

The LIGO-Virgo Collaboration, *GW170817: Implications for the Stochastic Gravitational-Wave Background from Compact Binary Coalescences*, Phys. Rev. Lett. 120, 091101 (2018); LIGO-P1700272; arXiv:1710.05837

The LIGO-Virgo Collaboration, *On the progenitor of binary neutron star merger GW170817*, Astrophys. J. Lett. 850, L40 (2017); LIGO-P1700264; arXiv:1710.05838

The LIGO-Virgo Collaboration, *Estimating the Contribution of Dynamical Ejecta in the Kilonova Associated with GW170817*, Astrophys. J. Lett. 850, L39 (2017); LIGO-P1700309; arXiv:1710.05836

The LIGO-Virgo Collaboration and observer teams who found the EM counterpart, *A gravitational-wave standard siren measurement of the Hubble constant*, Nature, doi:10.1038/nature24471, (2017); LIGO-P1700296; arXiv:1710.05835

The LIGO-Virgo Collaboration and many EM partners, *Multi-Messenger Observations of a Binary Neutron Star Merger*, Astrophys. J. Lett. 848, L12 (2017); LIGO-P1700294; arXiv:1710.05833

The LIGO-Virgo, Fermi, and Integral Collaborations, *Gravitational Waves and Gamma-rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A*, Astrophys. J. Lett. 848, L13 (2017); LIGO-P1700308; arXiv:1710.05834

The LIGO-Virgo Collaboration, *GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral*, Phys. Rev. Lett. 119, 161101 (2017); LIGO-P170817; arXiv:1710.05832

The LIGO-Virgo Collaboration, *First narrow-band search for continuous gravitational waves from known pulsars in advanced detector data*, Phys. Rev. D 96, 122006 (2017); LIGO-P1700221; arXiv:1710.02327

The LIGO-Virgo Collaboration, *GW170814: A Three-Detector Observation of Gravitational Waves from a Binary Black Hole Coalescence*, Phys. Rev. Lett. 119, 141101 (2017); LIGO-P170814; arXiv:1709.09660

The LIGO-Virgo Collaboration, *First search for nontensorial gravitational waves from known pulsars*, Phys. Rev. Lett. 120, 031104 (2018); LIGO-P1700009; arXiv:1709.09203

The LIGO-Virgo Collaboration, *First low frequency Einstein@Home all-sky search for continuous gravitational waves in advanced LIGO data*, Phys. Rev. D 96, 122004 (2017); LIGO-P1700127; arXiv:1707.02669

The LIGO-Virgo Collaboration, *All-sky Search for Periodic Gravitational Waves in the O1 LIGO Data*, Phys. Rev. D 96, 062002 (2017); LIGO-P1700052; arXiv:1707.02667

The LIGO-Virgo Collaboration, *Upper Limits on Gravitational Waves from Scorpius X-1 from a Model-Based Cross-Correlation Search in Advanced LIGO Data*, ApJ 847, 47 (2017); LIGO-P1600297; arXiv:1706.03119

The LIGO-Virgo Collaboration, *GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2*, Phys. Rev. Lett. 118, 221101 (2017); LIGO-P170104; arXiv:1706.01812

The LIGO-Virgo Collaboration, *Search for intermediate mass black hole binaries in the first observing run of Advanced LIGO*, Phys. Rev. D 96, 022001 (2017); LIGO-P1600273; arXiv:1704.04628

The LIGO-Virgo Collaboration, *Search for gravitational waves from Scorpius X-1 in the first Advanced LIGO observing run with a hidden Markov model*, Phys. Rev. D 95, 122003 (2017); LIGO-P1700019; arXiv:1704.03719

The LIGO, Virgo, Antares, & IceCube Collaborations, *Search for High-energy Neutrinos from Gravitational Wave Event GW151226 and Candidate LVT151012 with ANTARES and IceCube*, Phys. Rev. D 96, 022005 (2017); LIGO-P1600271; arXiv:1703.06298

The LIGO-Virgo Collaboration, *First search for gravitational waves from known pulsars with Advanced LIGO*, Astrophys. J. 839, no.1, 12, (2017); LIGO-P1600159; arXiv:1701.07709

The LIGO-Virgo Collaboration, *Directional limits on persistent gravitational waves from Advanced LIGO's first observing run*, Phys. Rev. Lett. 118, 121102 (2017); LIGO-P1600259; arXiv:1612.02030

The LIGO-Virgo Collaboration, *Upper Limits on the Stochastic Gravitational-Wave Background from Advanced LIGO's First Observing Run*, Phys. Rev. Lett. 118, 121101 (2017); LIGO-P1600258; arXiv:1612.02029

The LIGO-Virgo Collaboration, *Search for Gravitational Waves Associated with Gamma-Ray Bursts During the First Advanced LIGO Observing Run and Implications for the Origin of GRB 150906B*, Astrophys. J. 841, no.2, 89 (2017); LIGO-P1600298; arXiv:1611.07947

The LIGO-Virgo Collaboration, *Effects of waveform model systematics on the interpreta-*

tion of GW150914, Class. Quantum Grav. 34, 104002 (2017); LIGO-P1500259; arXiv:1611.07531

The LIGO-Virgo Collaboration, *All-sky search for short gravitational-wave bursts in the first Advanced LIGO run*, Phys. Rev. D 95, 042003 (2017); LIGO-P1600129; arXiv:1611.02972

The LIGO-Scientific Collaboration, *Exploring the Sensitivity of Next Generation Gravitational Wave Detectors*, Class. Quantum Grav. 34, 044001 (2017); LIGO-P1600143; arXiv:1607.08697

The LIGO-Virgo Collaboration, *The basic physics of the binary black hole merger GW150914*; Annalen Phys. 529, 1600209 (2017), LIGO-P1600161; arXiv:1608.01940

The LIGO-Virgo Collaboration, *Upper limits on the rates of binary neutron star and black-hole neutron-star mergers from Advanced LIGOs first observing run*, Astrophys. J. Lett. 832, L21 (2016); LIGO-P1600171; arXiv:1607.07456

The LIGO-Virgo Collaboration, *Search for continuous gravitational waves from neutron stars in globular cluster NGC 6544*, Phys. Rev. D 95, 082005 (2017); LIGO-P1500225; arXiv:1607.02216

The LIGO-Virgo Collaboration, *Results of the deepest all-sky survey for continuous gravitational waves on LIGO S6 data running on the Einstein@Home volunteer distributed computing project*, Phys. Rev. D 94, 102002 (2016); LIGO-P1500156; arXiv:1606.09619

The LIGO-Virgo Collaboration, *Binary Black Hole Mergers in the first Advanced LIGO Observing Run*, Phys. Rev. X 6, 041015 (2016); LIGO-P1600088; arXiv:1606.04856

The LIGO-Virgo Collaboration, *GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence*, Phys. Rev. Lett. 116, 241103 (2016); LIGO-P151226; arXiv:1606.04855

The LIGO-Virgo Collaboration, *Directly comparing GW150914 with numerical solutions of Einstein's equations for binary black hole coalescence*, Phys. Rev. D 94, 064035 (2016); LIGO-P1500263; arXiv:1606.01262

The LIGO-Virgo Collaboration, *An improved analysis of GW150914 using a fully spin-precessing waveform model*, Phys. Rev. X 6, 041014 (2016); LIGO-P1600048; arXiv:1606.01210

The LIGO-Virgo Collaboration, *A First Targeted Search for Gravitational-Wave Bursts from Core-Collapse Supernovae in Data of First-Generation Laser Interferometer Detectors*, Phys. Rev. D 94, 102001 (2016); LIGO-P1400208; arXiv:1605.01785

The LIGO-Virgo Collaboration, *Comprehensive All-sky Search for Periodic Gravitational Waves in the Sixth Science Run LIGO Data*, Phys. Rev. D 94, 042002 (2016); LIGO-P1500219; arXiv:1605.03233

The LIGO-Virgo Collaboration, *Search for Transient Gravitational Waves in Coincidence with Short Duration Radio Transients*, Phys. Rev. D 93, 122008 (2016); LIGO-P1400154; arXiv:1605.01707

B. P. Abbott et al., *Localization and broadband follow-up of the gravitational-wave transient GW150914*, Astrophys. J. Lett. 826, L13, (2016); LIGO-P1500227; arXiv:1602.08492

S. Adrián-Martínez et al. (The Antares, IceCube, LIGO, and Virgo Collaborations), *High-energy Neutrino follow-up search of Gravitational Wave Event GW150914 with IceCube and ANTARES*, Phys. Rev. D 93, 122010 (2016); LIGO-P1500271; arXiv:1602.05411

The LIGO-Virgo Collaboration, *GW150914: Implications for the stochastic gravitational-*

wave background from binary black holes, Phys. Rev. Lett. 116, 131102 (2016); LIGO-P1500222; arXiv:1602.03847

The LIGO-Virgo Collaboration, *Astrophysical Implications of the Binary Black-Hole Merger GW150914*, Astroph. J. Lett. 818, L22, (2016); LIGO-P1500262; arXiv:1602.03846

The LIGO Scientific Collaboration, *Calibration of the Advanced LIGO detectors for the discovery of the binary black-hole merger GW150914*, Phys. Rev. D 95, 062003 (2017); LIGO-P1500248; arXiv:1602.03845

The LIGO-Virgo Collaboration, *Characterization of transient noise in Advanced LIGO relevant to gravitational wave signal GW150914*, Class. Quant. Grav. 33, 134001 (2016); LIGO-P1500238; arXiv:1602.03844 The LIGO-Virgo Collaboration, *Observing gravitational-wave transient GW150914 with minimal assumptions* Phys. Rev. D 93, 122004 (2016); LIGO-P1500229; arXiv:1602.03843

The LIGO-Virgo Collaboration, *The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914*, Astrophys. J. Lett. 833, L1 (2016); LIGO-P1500217; arXiv:1602.03842

The LIGO-Virgo Collaboration, *Supplement: The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914*, Astrophys. J. Supp. 227, 14 (2016); LIGO-P1500217; arXiv:1606.03939

The LIGO-Virgo Collaboration, *Tests of general relativity with GW150914*, Phys. Rev. Lett. 116, 221101 (2016); LIGO-P1500213; arXiv:1602.03841

The LIGO-Virgo Collaboration, *Properties of the binary black hole merger GW150914*, Phys. Rev. Lett. 116, 241102 (2016); LIGO-P1500218; arXiv:1602.03840

The LIGO-Virgo Collaboration, *GW150914: First results from the search for binary black hole coalescence with Advanced LIGO*, Phys. Rev. D 93, 122003 (2016); LIGO-P1500269; arXiv:1602.03839

The LIGO-Virgo Collaboration, *GW150914: The Advanced LIGO Detectors in the Era of First Discoveries*, Phy. Rev. Lett. 116, 131103 (2016); LIGO-P1500237; arXiv:1602.03838

The LIGO-Virgo Collaboration, *Observation of Gravitational Waves from a Binary Black Hole Merger*, Phys. Rev. Lett. 116, 061102 (2016); LIGO-P150914; arXiv:1602.03837

The LIGO-Virgo Collaboration, *Prospects for Localization of Gravitational Wave Transients by the Advanced LIGO and Advanced Virgo Observatories*, Living Rev. Relativity, 19, 1 (2016); LIGO-P1200087; arXiv:1304.0670

The LIGO-Virgo Collaboration, *An all-sky search for long-duration gravitational wave transients with LIGO*, Phys. Rev. D 93, 042005 (2016); LIGO-P1400138; arXiv:1511.04398

The LIGO-Virgo Collaboration, *First low frequency all-sky search for continuous gravitational wave signals*, Phys. Rev. D 93, 042007 (2016); LIGO-P1500030; arXiv:1510.03621

The LIGO-Virgo Collaboration, *A search of the Orion spur for continuous gravitational waves using a “loosely coherent” algorithm on data from LIGO interferometers*, Phys. Rev. D 93, 042006 (2016); LIGO-P1500034; arXiv:1510.03474

The LIGO-Virgo Collaboration, *Searches for continuous gravitational waves from nine young supernova remnants*, Astrophys. J. 813, 39, (2015); LIGO-P1400182; arXiv:1412.5942

The LIGO Scientific Collaboration, *Advanced LIGO*, Class. Quantum Grav., 32, 074001,

(2015); LIGO-P1400177; arXiv:1411.4547

The LIGO-Virgo Collaboration, *A directed search for gravitational waves from Scorpius X-1 with initial LIGO*, Phys. Rev. D 91, 062008, (2015); LIGO-P1400094; arXiv:1412.0605

The LIGO-Virgo Collaboration, *Narrow-band search of continuous gravitational-wave signals from Crab and Vela pulsars in Virgo VSR4 data*, Phys. Rev. D 91, 022004, (2015); LIGO-P1400045; arXiv:1410.8310

The LIGO-Virgo Collaboration, *Characterization of the LIGO detectors during their sixth science run*, Class. Quantum Grav., 32, 105012, (2015); LIGO-P1000142; arXiv:1410.7764

The LIGO-Virgo Collaboration, *Searching for stochastic gravitational waves using data from the two co-located LIGO Hanford detectors*, Phys. Rev. D 91, 022003, (2015); LIGO-P1000112; arXiv:1410.6211

The LIGO-Virgo and IceCube Collaborations, *Multimessenger Search for Sources of Gravitational Waves and High-energy Neutrinos: Results for Initial LIGO-Virgo and IceCube*, Phys. Rev. D 90, 102002, (2014); LIGO-P1400046; arXiv:1407.1042

The LIGO-Virgo Collaboration, *Improved Upper Limits on the Stochastic Gravitational-Wave Background from 2009-2010 LIGO and Virgo Data*, Phys. Rev. Lett 113, 231101, (2014); LIGO-P1300154; arXiv:1406.4556

The LIGO-Virgo Collaboration, *First all-sky search for continuous gravitational waves from unknown sources in binary systems*, Phys. Rev. D, 90, 062010, (2014); LIGO-P1300048; arXiv:1405.7904

The LIGO-Virgo Collaboration, *Methods and results of a search for gravitational waves associated with gamma-ray bursts using the GEO600, LIGO, and Virgo detectors*, Phys. Rev. D, 89, 122004 (2014); LIGO-P1300086; arXiv:1405.1053

The LIGO-Virgo Collaboration, *Search for gravitational radiation from intermediate mass black hole binaries in data from the second LIGO-Virgo joint science run*, Phys. Rev. D, 89, 122003 (2014); LIGO-P1300158; arXiv:1404.2199

The LIGO-Virgo and IPN Collaborations, *Search for gravitational waves associated with gamma-ray bursts detected by the Interplanetary Network*, Phys. Rev. Lett., 113, 011102 (2014); LIGO-P1300226; arXiv:1403.6639

The LIGO-Virgo Collaboration, *Search for gravitational wave ringdowns from perturbed intermediate mass black holes in LIGO-Virgo data from 2005-2010*, Phys. Rev. D, 89, 102006 (2014); LIGO-P1300156; arXiv:1403.5306

The LIGO-Virgo Collaboration, *Implementation of an F-statistic all-sky search for continuous gravitational waves in Virgo VSR1 data*, Class. Quantum Grav., 31, 165014 (2014); LIGO-P1300133; arXiv:1402.4974

The LIGO-Virgo and NINJA Collaborations, *The NINJA-2 project: Detecting and characterizing gravitational waveforms modelled using numerical binary black hole simulations*, Class. Quantum Grav., 31, 115004 (2014); LIGO-P1300199; arXiv:1401.0939

The LIGO-Virgo Collaboration, *Application of a Hough search for continuous gravitational waves on data from the 5th LIGO science run*, Class. Quantum Grav., 31, 085014 (2014); LIGO-P1300071; arXiv:1311.2409

The LIGO-Virgo Collaboration, *Constraints on cosmic (super)strings from the LIGO-Virgo gravitational-wave detectors*, Phys. Rev. Lett., 112, 131101 (2014); LIGO-P130093;

arXiv:1310.2384

The LIGO-Virgo Collaboration, *First Searches for Optical Counterparts to Gravitational-wave Candidate Events*, *Astrophys. J. Suppl.*, 211, 7, (2014); LIGO-P1200171; arXiv:1310.2314

The LIGO-Virgo Collaboration, *A directed search for continuous gravitational waves from the galactic center*, *Phys. Rev. D*, 88, 102022, (2013); LIGO-P1300037; arXiv:1309.6221

The LIGO-Virgo Collaboration, *A search for long-lived gravitational-wave transients coincident with long gamma-ray bursts*, *Phys. Rev. D*, 88, 122004, (2013); LIGO-P1200093; arXiv:1309.6160

The LIGO-Virgo Collaboration, *Gravitational waves from known pulsars: results from the initial detector era*, *Astrophys. J.*, 785, 119, (2014); LIGO-P1200104; arXiv:1309.4027

The LIGO Scientific Collaboration, *Enhanced sensitivity of the LIGO gravitational wave detector by using squeezed states of light*, *Nature Photonics*, doi: 10.1038/nphoton.2013.177 (2013)

The LIGO-Virgo Collaboration, *Parameter estimation for compact binary coalescence signals with the first generation gravitational-wave detector network*, LIGO-P1200021, *Phys. Rev. D* 88, 062001 (2013); arXiv:1304.1775

S. Adrián-Martínez et al. (The ANTARES, LIGO, and Virgo Collaborations), *A First Search for coincident Gravitational Waves and High Energy Neutrinos using LIGO, Virgo and ANTARES data from 2007*, LIGO-P1200006, *J. Cosmol. Astropart. Phys.* 06, 008 (2013); arXiv:1205.3018

The LIGO-Virgo Collaboration, *Einstein@Home all-sky search for periodic gravitational waves in LIGO S5 data*, LIGO-P1200026, *Phys. Rev. D*, 87, 042001, (2013); arXiv:1207.7176

The LIGO-Virgo Collaboration, *Search for Gravitational Waves from Binary Black Hole Inspiral, Merger and Ringdown in LIGO-Virgo Data from 2009-2010*, LIGO-P1200024, *Phys. Rev. D*, 87, 022002 (2013); arXiv:1209.6533

P. A. Evans et al. (The LIGO, Virgo, and Swift Collaborations), *Swift follow-up observations of candidate gravitational-wave transient events*, (2012), LIGO-P1100038, *Astrophys. J. Suppl. Ser.*, 203, 28 (2012); arXiv:1205.1124

J. Aasi et al. (The LIGO-Virgo Collaboration), *The characterization of Virgo data and its impact on gravitational-wave searches*, *Class. Quantum Grav.*, 29, 155002 (2012); arXiv:1203.5613