November 2022

Dear Colleagues of the Virgo Collaboration,

I had the honour of being nominated as a candidate for the position of Virgo data analysis coordinator and co-chair of the LIGO-Virgo-KAGRA Data Analysis Council. After careful consideration I have accepted to run in the election for this position, and I believe I possess the right experience within the LVK and within the field of gravitational-wave astronomy to provide the Virgo Collaboration with a positive service in this very challenging role.

This election comes at a time of paramount importance for the LVK. We are only a few months away from the beginning of O4, and the expectations of the scientific community are high. For O4 to be successful, the Data Analysis Council must never loose sight of the LVK's role in Science, and of the fact that the goals and needs of our various data analysis groups are diverse. The Compact Binary Coalescence group faces the challenge of ingesting, processing, and reporting to the wider community on an ever increasing number of signals. The Burst group also participates in this endeavour with pipelines that are pivotal for the scientific output of the Collaboration, and it is also equipped with tools to unveil new kinds of transient signals. Finally, the Continuous Wave and Stochastic groups are edging closer and closer to their respective detection objectives, and in doing so they place stringent upper bound results with profound implications in high-energy astrophysics and fundamental physics.

While being an extremely condensed summary, this picture highlights how our data analysis teams are on different, albeit equally important and exciting, paths. The Data Analysis Council, and its co-chairs in particular, must strive to provide adequate planning and the management infrastructure necessary to place all data analysis groups in the best conditions to operate and flourish. It must be a venue for these different souls of our observations teams to meet and to find a common ground to successfully work towards all the goals we have set ahead of ourselves. We will have to further streamline the way the Compact Binary Coalescence group operates in order to avoid burnout of human resources, wasting computing resources, and decreasing the quality of the scientific output of this group and hence the LVK at large. At the same time, we must strenuously support our march towards detecting, say, our first supernova or persistent signal. The Virgo data analysis coordinator will have to ensure that the voice of Virgo data analysts and that of data quality and detector characterization experts is heard on all these matters, and their input and contributions are valued.

My experience in the LVK mirrors these challenges, admittedly on a smaller scale. I have co-chaired for six years the working group that runs dedicated searches to uncover transient signals at the time and sky position of gamma-ray burst, fast radio burst, and magnetar burst events. This specific group is a joint Burst and Compact Binary Coalescence one, where members with obviously diverse backgrounds, operation strategies, and tools come together. We report to and carry responsibilities towards two of the four major data analysis groups, but we are also akin to the Continuous Wave and Stochastic data analysis groups in that, with the notable exception of GW170817-GRB 170817A, we mainly produce upper limit results. The group also has a track-record in working closely with colleagues from external collaborations (mainly *Fermi*-GBM and *Swift*-BAT, but also the InterPlanetary Network and CHIME), a process handled with weekly calls and dedicated MoUs. Recently, we faced the need of issuing a GCN notice (GCN 32877), a process which would also benefit from streamlining as the LVK gains a more prominent and active role in the wider astronomy community. In other words, as co-chair of this group I am accustomed with several aspects I would encounter as Virgo data analysis coordinator and co-chair of the LVK Data Analysis Council, namely: working across data analysis groups, handling the interface of the LVK with the external astronomy community, tracking both exceptional results with pressing timelines and more standard ones.

The material I attach presents a list of my main contributions that I believe are relevant to showcase my involvement and impact in LVK data analysis at large, and my detailed curriculum vitæ.

I wish everyone of you a successful approach to O4 and another observing run rich of ground-breaking scientific discoveries.

Francesco Pannarale

Highlights of contributions relevant for the position

- GRB/FRB/magnetar group co-chair (2016-present)
- Burst review co-chair (2018-present)
- Issued https://gcn.gsfc.nasa.gov/gcn3/32877.gcn3 on behalf of the LVK
- Paper manager of the O3a GRB collaboration paper [41]
- LSC representative on the paper writing team of the GW170817–GRB 170817A collaboration paper [119].
- Member of expert panel of six at the press conference for the announcement of GW170817 held at the Royal Society of London, with moderator The Lord Rees of Ludlow Martin Rees.
- Paper writing team member of the O1 GRB collaboration paper [129]
- Liaison for the Burst hardware injections campaign to validate GW150914 [134]
- Delivered the template bank used online by `gstLAL` in O1 [142]
- Contributed results and content of the "No constraint on non-GR polarization states" section of the GW150914 testing GR companion paper [158]
- Introduced the concept of "EM-Bright" to speed-up targetted searches and provide astronomer partners with a quantitative proxy upon which to base their follow-up decision strategies [174] (see also [60])
- `PyGRB` pipeline, within the `PyCBC` framework: maintainer and developer; provided run environments and template banks in O1, O2, O3
- `BayesWave` pipeline: developed post-processing and webpages, optimized main algorithm for O1 (35% speed-up), and wrote the infrastructure to operate on Condor in O1
- Compact Binary Coalescence gravitational waveform models I contributed to formulate and implement and/or review: `PhenomHM` [105], `PhenomNSBH` [58], `PhenomPNR` [20], `TEOBResumS` [99], and the `NRTidal` phasing which was inserted in `SEOBNRv4_ROM_NRTidal`, `PhenomD_NRTidal`, and `PhenomPv2_NRTidal` [94].

Francesco Pannarale
Associate Professor

Dipartimento di Fisica "G.Marconi"
Sapienza – University of Rome
Piazzale Aldo Moro 2
I-00185 Rome
Italy
☎ +39-06-4991-4468
✉ francesco.pannarale@ligo.org

Employment History

07/2021-present: **Associate Professor**, Dipartimento di Fisica, Sapienza – University of Rome

07/2018-06/2021: **Assistant Professor** and **Rita Levi Montalcini fellow**, Dipartimento di Fisica, Sapienza – University of Rome

01/2017-06/2018: **Research fellow**, Gravitational Physics Group, Cardiff University

11/2013-12/2016: **Research associate**, Gravitational Physics Group, Cardiff University

11/2009-10/2013: **Post-doctoral researcher**, Numerical Relativity Group, Albert-Einstein-Institut, Max-Planck-Institut für Gravitationsphysik

Education

11/2006-10/2009: **Ph. D. in physics**, Sapienza – University of Rome

Thesis title: Compact Gravitational Wave Sources (available online)

Supervisor: Prof. Valeria Ferrari

10/2004-09/2006: **Master's degree in theoretical physics** (*Laurea specialistica in fisica teorica*), Sapienza – University of Rome, full marks *cum laude* (110/110 e lode)

Thesis title: *Emissione gravitazionale di sistemi binari formati da un buco nero di Schwarzschild e una stella* (Gravitational Radiation Emission from Star + Schwarzschild Black Hole Binary Systems)

Supervisor: Prof. Valeria Ferrari

10/2001-09/2004: **Bachelor's degree in physics**, (*Laurea in fisica*) Sapienza – University of Rome, full marks *cum laude* (110/110 e lode)

Dissertation title: *Onde gravitazionali emesse da buchi neri perturbati* (Gravitational Waves Emitted by Perturbed Black Holes)

Supervisor: Prof. Valeria Ferrari

Scientific Memberships

2018-present: Associate of the INFN (*Istituto Nazionale di Fisica Nucleare*)

Member of the Virgo Collaboration

Member of the GRAWITA Collaboration

2013-2018: Member of the LIGO Scientific Collaboration

2006-2009: Associate of the INFN

Current Research Roles and Responsibilities

2018-Present:	Review Co-chair of the LIGO-Virgo-KAGRA Collaboration Burst data analysis group
2016-Present:	Co-chair of the LIGO-Virgo-KAGRA Collaboration GRB/FRB/Magnetar follow-up data analysis working group

Awards and Grants

2021: Sapienza Large Facilities Grant, as participant in the "Multi-purpose millimetre-and-submillimiter-wave testing facility (Vector Network Analyser) for accurate characterisation of quasi-optical and waveguide components/systems in the frequency range 75-500 GHz" project [520000 €]

2020: 9000 € for the incoming visiting researcher Dr. Tito Dal Canton (*Sapienza, Professori Visitatori per la Ricerca*)

2018: Best poster award at the *LIGO-Virgo Collaboration meeting*, Maastricht, Netherlands

2017: Rita Levi Montalcini Fellowship (197,973.66 €)

9400 £ from the Cardiff Incoming Visiting Fellowship Scheme & International Collaboration Seedcorn Fund for the collaboration "Multimessenger Astronomy with Neutron Star-Black Hole Mergers" with the Princeton and Parma Universities

Princess of Asturias Award for Technical and Scientific Research

Royal Astronomical Society Group Achievement Award for Astronomy

Successfully defended a 12-Mhr PRACE allocation request for the multi-year project access *Modeling gravitational-wave signals from black-hole binaries* (17/03/2017)

2016: Gruber Cosmology Prize

Special Breakthrough Prize in Fundamental Physics

Vice Chancellor's Award for Outstanding Contribution to the University, as part of the Cardiff University Gravitational Physics Group

10000 € by ECT* and ENSAR2 to organize an ECT* workshop ["Nuclear Astrophysics in the Gravitational Wave Era" http://www.ectstar.eu/node/2223]

300 £ of travel funds (Cardiff University)

Selected for Cardiff University's Fast Track to Fellowships program

2012: 10000 € from the German Research Foundation (DFG) for the project *Improving Advanced LIGO/Virgo event rate estimates for compact binary mergers* [167–169, 176, 178, 179]

2006: Teaching assistance fellowship for the period 2006-2009, Sapienza – University of Rome

Ph. D. position and fellowship at the Physics Department of the Sapienza – University of Rome (XXII Ph. D. round, starting 11/2006; 10 fellowships, about 100 candidates)

2005: U. S. Department of Energy summer student fellowship to perform research at Fermilab

2002-05: 3 collaboration fellowships at the Sapienza – University of Rome Physics Department

Teaching

2022-23:	*Gravitational Waves, Neutron stars, and Black Holes*, Department of Physics, Sapienza - University of Rome (a 60hr course for master students, covering 28hrs)
2022-23:	*Elettromagnetismo*, Department of Mathematics, Sapienza - University of Rome (an 84hr course for third year students, covering 52hrs)
2021-23:	*Computing Methods for Physics*, Department of Physics, Sapienza - University of Rome (a 60hr course for master students)
2021-22:	*Elettromagnetismo*, Department of Mathematics, Sapienza - University of Rome (a 90hr course for third year students)
2018-21:	*Gravitational-Wave Astronomy*, Department of Physics, Sapienza - University of Rome (a 10hr course for second and third year honours degree students)
	Fisica Applicata, Department of Medicine, Sapienza - University of Rome (a 12hr course for first year Nursing and Midwifery Sciences students)
	Fisica, Department of Computer Science, Sapienza - University of Rome (a 60hr course for third year students)
June 2016:	*Gravitational Waves from Conception to Detection*, **invited opening lecture** for the 2nd International Doctorate Network in Particle Physics, Astrophysics and Cosmology (IDPASC) Students Workshop, Universidade do Porto (Portugal) [www.idpasc.lip.pt/LIP/events/2016_workshop_students_feup/index.php]
2015-16:	*Advanced General Relativity and Gravitational Waves* module organizer, Cardiff University (a course for third and fourth year students)
Nov. 2015:	*Gravitational Waves from Compact Binary Coalescences* lecture for project students, Cardiff University
June 2012:	*Neutron Star (Astro)Physics and Compact Binary Mergers* lectures, International Max Planck Research School in Gravitational Waves
2006-09:	Teaching assistant for *Laboratorio di Calcolo* (Computer Programming Lab) and *Metodi e Modelli Matematici per la Fisica* (Mathematical Methods and Models for Physics) classes, part of the B.Sc. physics curriculum at Sapienza – Università di Roma

Student Supervision

I am currently supervising: Sebastiàn Gomez Lopez and Adriano Frattale Mascioli (both PhD in Physics), Lorenzo Piccari (MSc in Physics), Patrizia Barria (BSc in Physics), and Samuele Maria Meucci and Emma Rinaldi (both BSc in Mathematics).

The students listed below were supervised by me and they are from Sapienza – University of Rome, unless otherwise noted.

2022:	Adriano Frattale Mascioli (MSc in Physics), and Nilay Mancini (BSc in Physics)
	Co-supervised Mattia Emma (MSc in Astrophysics, Potsdam University) [7]
2021:	Francesco Soligo (BSc in Physics)
	Giulia Ortame (first year Physics Excellence Path project student)

2020:	Giada Caneva Santoro [39, 41], Elisa Nitoglia [39, 58], and Samuel Patrone (all MSc in Physics); *Samuel was awarded the 2020 con.Scienze prize for best Master Thesis in Italy in mathematics, physics, and natural sciences, and Elisa was awarded the 2020 Amaldi Research Center prize for best Master Thesis*
	Co-supervised Maria Assiduo and Antonella Bianchi (both MSc in Physics, University of Naples Federico II) [41]
	Mattia Emma and Adriano Frattale Mascioli (both BSc in Physics)
2019:	Supervised Raul Ciancarella (MSc in Physics) [46]
	Supervised Gino Contestabile and Senad Beadini (both BSc in Computer Science)
	Co-supervised Elisa Velcani (BSc in Physics)
2017:	Mentored Rhys Green and Cory Thomas (MSc project students, Cardiff University) [43]
2016-2018:	Mentored Reetika Dudi (PhD student, Friedrich-Schiller-Universität Jena) [101]
2016:	Mentored Alexander Jenkins (summer student, Cambridge University)
2015:	Co-supervised Nicola De Lillo (BSc in Physics, University of Trento) [84]
2014:	Mentored summer students Ronaldas Macas (University of Glasgow) [92] and Liz Watkins (Cardiff University)

Outreach

06/04/2021:	Lecture for high school students on compact binary coalescences and gravitational waves (as part of the *Percorso per le Competenze Trasversali e per l'Orientamento (PCTO)* project *Costruisci la tua onda gravitazionale!*)
10/04/2021:	*Onde Gravitazionali*, a 2-hour livestream question-and-answer event held by the Casa Sardegna association, that I attended as an expert along with Prof.A.Marcianò (Fudan University Shanghai)
13/06/2018:	*From Einstein to a New Science*, **invited talk** at the Cardiff University Business School research away day, Cardiff
11/05/2018:	*Chirp and Twinkle Little Stars*, a stand-up talk on my research activity for the general public, Chapter Arts Centre, Cardiff
20/20/2017:	*Chirp and Twinkle Little Stars*, opening talk at the "Gravitational Celebrations" events, Cardiff University [>250 person attendance; https://www.eventbrite.co.uk/e/gravitational-celebrations-tickets-38764563854]
16/10/17:	Member of expert panel of six at the press conference for the announcement of GW170817, Royal Society of London, moderator The Lord Rees of Ludlow Martin Rees.
14/10/2016:	*The First Sounds of the Cosmic Symphony*, a stand-up talk on my research activity for the general public, Chapter Arts Centre, Cardiff
09/09/2016:	*Gravitational Waves: Nature's Biggest Explosions*, Cardiff University Open Day
01/06/2016:	*Ascoltare le voci dell'Universo* (*Listening the voices of the Universe*), a **two-hour invited outreach talk** on gravitational waves and their first detection given at the liceo scientifico statale Nomentano (Nomentano high school), Rome, Italy

02/2016:	Contributed to Black Hole Hunter (www.blackholehunter.org), an interactive online game on gravitational-wave detection
2014-18:	Volunteer at the gravitational physics stand of the "Star Attractions at the Museum" at National Museum Cardiff [event dates: 10/01/2014, 28/01/2017]
2013-18:	Volunteer at Cardiff University School of Physics and Astronomy open days for prospective students

Service Activities

Regular referee:	Physical Review Letters, Physical Review D, Classical and Quantum Gravity, Journal of Physics G: Nuclear and Particle Physics, Astroparticle Physics, The Astrophysical Journal Letters, The Astrophysical Journal
Regular reviewer:	U.S. National Science Foundation (NSF) Astronomy and Astrophysics Research Grants (AAG), Netherlands Organisation for Scientific Research (NWO)
2022:	Scientific organizing committee member of the Third Gravi-Gamma Workshop https://agenda.infn.it/event/30884/ Organizing committee member of the Amaldi Research Center Summer School https://agenda.infn.it/event/28968/
04/10/2021:	PhD Thesis committee member, Université Paris-Saclay, France
2021-22:	Early career scientist mentor for the Virgo Early Career Scientists group
2019-present:	Steering committee member of the Amaldi Research Center (www.phys.uniroma1.it/fisica/arc_amaldi_research_center)
2018-present:	Member of multiple BSc and MSc degree committees, Physics Department, Sapienza – University of Rome
2018:	EWASS 2018 session organizer (SS18, "Multi-messenger Astronomy with Gravitational Waves")
2017:	Principal organizer of the ECT* workshop "Nuclear Astrophysics in the Gravitational Wave Era"[1]
2016-18:	Speaker at Science and Social Sciences careers events organized by the University Graduate College at Cardiff University

[1] www.ectstar.eu/workshops/nuclear-astrophysics-in-the-gravitational-wave-astronomy-era/.

Publications

171 peer-reviewed publications (2 solo-author) and 14 preprints, 57939 citations by 17264 papers, h-index 82, g-index 186, (source: ADS-NASA, November 2022).

---

[1] R. Abbott, et al., *Search for gravitational-wave transients associated with magnetar bursts in Advanced LIGO and Advanced Virgo data from the third observing run*, arXiv:2210.10931 (2022).

[2] F. Acernese, et al., *Virgo Detector Characterization and Data Quality: tools*, arXiv:2210.15634 (2022).

[3] F. Acernese, et al., *Virgo Detector Characterization and Data Quality: results from the O3 run*, arXiv:2210.15633 (2022).

[4] R. Abbott, et al., *Search for continuous gravitational wave emission from the Milky Way center in O3 LIGO-Virgo data*, Phys. Rev. D **106**, 042003 (2022).

[5] G. Stratta, F. Pannarale, *Neutron Star Binary Mergers: The Legacy of GW170817 and Future Prospects*, Universe **8**, 459 (2022).

[6] R. Abbott, et al., *Model-based cross-correlation search for gravitational waves from the low-mass X-ray binary Scorpius X-1 in LIGO O3 data*, arXiv:2209.02863 (2022).

[7] M. Emma, F. Schianchi, F. Pannarale, V. Sagun, T. Dietrich, *Numerical Simulations of Dark Matter Admixed Neutron Star Binaries*, Particles **5**, 273 (2022).

[8] F. Acernese, et al., *Virgo Detector Characterization and Data Quality during the O3 run*, arXiv:2205.01555 (2022).

[9] R. Abbott, et al., *First Joint Observation by the Underground Gravitational-Wave Detector, KAGRA, with GEO600*, Progress of Theoretical and Experimental Physics **2022**, 063F01 (2022).

[10] R. Abbott, et al., *Search for Gravitational Waves Associated with Gamma-Ray Bursts Detected by Fermi and Swift During the LIGO-Virgo Run O3b*, Astrophys. J. **928**, 186 (2022).

[11] R. Abbott, et al., *Search for Gravitational Waves Associated with Fast Radio Bursts Detected by CHIME/FRB During the LIGO–Virgo Observing Run O3a*, arXiv:2203.12038 (2022).

[12] F. Acernese, et al., *The Virgo O3 Run and the Impact of the Environment*, arXiv:2203.04014 (2022).

[13] R. Abbott, et al., *Constraints on Dark Photon Dark Matter Using Data from LIGO's and Virgo's Third Observing Run*, Phys. Rev. D **105**, 063030 (2022).

[14] R. Abbott, et al., *Search for Intermediate-Mass Black Hole Binaries in the Third Observing Run of Advanced LIGO and Advanced Virgo*, Astronomy & Astrophysics **659**, A84 (2022).

[15] F. Acernese, et al., *Calibration of Advanced Virgo and Reconstruction of the Detector Strain $h(t)$ During the Observing Run O3*, Class. Quant. Grav. **39**, 045006 (2022).

[16] R. Abbott, et al., *Search for Gravitational Waves from Scorpius X-1 with a Hidden Markov model in O3 LIGO data*, Phys. Rev. D **106**, 062002 (2022).

[17] R. Abbott, et al., *All-sky Search for Continuous Gravitational Waves from Isolated Neutron Stars Using Advanced LIGO and Advanced Virgo O3 data*, arXiv:2201.00697 (2022).

[18] R. Abbott, et al., *Narrowband Searches for Continuous and Long-Duration Transient Gravitational Waves from Known Pulsars in the LIGO-Virgo Third Observing Run*, Astrophys. J. **932**, 133 (2022).

[19] R. Abbott, et al., *Tests of General Relativity with GWTC-3*, arXiv:2112.06861 (2021).

[20] E. Hamilton, et al., *Model of Gravitational Waves from Precessing Black-Hole Binaries Through Merger and Ringdown*, Phys. Rev. D **104**, 124027 (2021).

[21] R. Abbott, et al., *All-sky Search for Short Gravitational-Wave Bursts in the Third Advanced LIGO and Advanced Virgo Run*, Phys. Rev. D **104**, 122004 (2021).

[22] R. Abbott, et al., *Search for Lensing Signatures in the Gravitational-Wave Observations from the First Half of LIGO-Virgo's Third Observing Run*, Astrophys. J. **923**, 14 (2021).

[23] R. Abbott, et al., *All-sky Search for Gravitational Wave Emission from Scalar Boson Clouds Around Spinning Black Holes in LIGO O3 Data*, Phys. Rev. D **105**, 102001 (2022).

[24] R. Abbott, et al., *Search of the Early O3 LIGO Data for Continuous Gravitational Waves from the Cassiopeia A and Vela Jr. Supernova Remnants*, Phys. Rev. D **105**, 082005 (2022).

[25] R. Abbott, et al., *Searches for Gravitational Waves from Known Pulsars at Two Harmonics in the Second and Third LIGO-Virgo Observing Runs*, Astrophys. J. **935**, 1 (2022).

[26] R. Abbott, et al., *The Population of Merging Compact Binaries Inferred Using Gravitational Waves Through GWTC-3*, arXiv:2111.03634 (2021).

[27] R. Abbott, et al., *Constraints on the Cosmic Expansion History from GWTC-3*, arXiv:2111.03604 (2021).

[28] R. Abbott, et al., *GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run*, arXiv:2111.03606 (2021).

[29] R. Abbott, et al., *All-sky Search for Long-Duration Gravitational-Wave Bursts in the Third Advanced LIGO and Advanced Virgo run*, Phys. Rev. D **104**, 102001 (2021).

[30] R. Abbott, et al., *Constraints from LIGO O3 Data on Gravitational-wave Emission Due to r-modes in the Glitching Pulsar PSR J0537-6910*, Astrophys. J .**922**, 71A (2021).

[31] R. Abbott, et al., *Searches for Continuous Gravitational Waves from Young Supernova Remnants in the Early Third Observing Run of Advanced LIGO and Virgo*, Astrophys. J. **921**, 80 (2021).

[32] R. Abbott, et al., *All-sky, All-frequency Directional Search for Persistent Gravitational-Waves from Advanced LIGO's and Advanced Virgo's First Three Observing Runs*, Phys. Rev. D **105**, 122001 (2022).

[33] R. Abbott, et al., *All-sky search for Continuous Gravitational Waves from Isolated Neutron Stars in the Early O3 LIGO Data*, Phys. Rev. D **104** h2004A (2021).

[34] R. Abbott, et al., *Search for Subsolar-Mass Binaries in the First Half of Advanced LIGO and Virgo's Third Observing Run*, Phys. Rev. Lett. **129**, 061104 (2022).

[35] R. Abbott, et al., *Search for Continuous Gravitational Waves from 20 Accreting Millisecond X-ray Pulsars in O3 LIGO data*, Phys. Rev. D **105**, 02200 (2022).

[36] R. Abbott, et al., *GWTC-2.1: Deep Extended Catalog of Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run*, arXiv:2108.01045 (2021).

[37] R. Abbott, et al., *Search for Anisotropic Gravitational-Wave Backgrounds Using Data from Advanced LIGO and Advanced Virgo's First Three Observing Runs*, Phys. Rev. D **104**, 022005 (2021).

[38] R. Abbott, et al., *Upper Limits on the Isotropic Gravitational-Wave Background from Advanced LIGO's and Advanced Virgo's Third Observing Run*, Phys. Rev. D **104**, 022004 (2021).

[39] D. Davis, et al., *LIGO Detector Characterization in the Second and Third Observing Runs*, Class. Quant. Grav. **38**, 135014 (2021).

[40] R. Abbott, et al., *Observation of Gravitational Waves from Two Neutron Star-Black Hole Coalescences*, Astrophys. J. Lett. **915**, L5 (2021).

[41] R. Abbott, et al., *Search for Gravitational Waves Associated with Gamma-Ray Bursts Detected by Fermi and Swift During the LIGO-Virgo Run O3a*, Astrophys. J. **915**, 86 (2021).

[42] R. Abbott, et al., *Constraints on cosmic strings using data from the third Advanced LIGO-Virgo observing run*, Phys. Rev. Lett. **126**, 241102 (2021).

[43] R. Green, C. Hoy, S. Fairhurst, M. Hannam, F. Pannarale, C. Thomas, *Identifying when Precession can be Measured in Gravitational Waveforms*, Phys. Rev. D **103**, 124023 (2021).

[44] R. Abbott, et al., *Tests of General Relativity with Binary Black Holes from the second LIGO-Virgo Gravitational-Wave Transient Catalog*, Phys. Rev. D **103**, 122002 (2021).

[45] R. Abbott, et al., *Diving Below the Spin-Down Limit: Constraints on Gravitational Waves from the Energetic Young Pulsar PSR J0537-6910*, Astrophys. J. Lett. **913**, L27 (2021).

[46] R. Ciancarella, F. Pannarale, A. Addazi, A. Marciano, *Constraining Mirror Dark Matter Inside Neutron Stars*, Physics of the Dark Universe **32**, 100796 (2021).

[47] R. Abbott, et al., *Population Properties of Compact Objects from the Second LIGO-Virgo Gravitational-Wave Transient Catalog*, Astrophys. J. Lett. **913**, L7 (2021).

[48] R. Abbott, et al., *GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run*, Phys. Rev. X **11**, 021053 (2021).

[49] R. Abbott, et al., *All-sky Search in Early O3 LIGO Data for Continuous Gravitational-Wave Signals from Unknown Neutron Stars in Binary Systems*, Phys. Rev. D **103**, 064017 (2021).

[50] B.P. Abbott, et al., *A Gravitational-Wave Measurement of the Hubble Constant Following the Second Observing Run of Advanced LIGO and Virgo*, Astrophys. J. **909**, 218 (2021). [Erratum: Astrophys. J. **923**, 279 (2021).]

[51] R. Abbott, et al., *Open Data from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo*, SoftwareX **13**, 100658 (2021).

[52] R. Abbott, et al., *Gravitational-wave Constraints on the Equatorial Ellipticity of Millisecond Pulsars*, Astrophys. J. Lett. **902**, L21 (2020).

[53] F. Acernese, et al., *Quantum Backaction on Kg-Scale Mirrors: Observation of Radiation Pressure Noise in the Advanced Virgo Detector*, Phys. Rev. Lett. **125**, 131101 (2020).

[54] B.P. Abbott, et al., *Prospects for observing and localizing gravitational-wave transients with Advanced LIGO, Advanced Virgo and KAGRA*, Living Reviews in Relativity **23**, 3 (2020).

[55] R. Abbott, et al., *Properties and Astrophysical Implications of the 150 $M_\odot$ Binary Black Hole Merger GW190521*, Astrophys. J. Lett. **900**, L13 (2020).

[56] R. Abbott, et al., *GW190521: A Binary Black Hole Merger with a Total Mass of 150 $M_\odot$*, Phys. Rev. Lett. **125**, 101102 (2020).

[57] R. Abbott, et al., *GW190412: Observation of a Binary-Black-Hole Coalescence with Asymmetric Masses*, Phys. Rev. D 102, 043015 (2020).

[58] J.E. Thompson, E. Fauchon-Jones, S. Khan, E. Nitoglia, F. Pannarale, T. Dietrich, M. Hannam, *Modeling the Gravitational Wave Signature of Neutron Star Black Hole Coalescences*, Phys. Rev. D **101**, 124059 (2020).

[59] R. Abbott, et al., *GW190814: Gravitational Waves from the Coalescence of a 23 Solar Mass Black Hole with a 2.6 Solar Mass Compact Object*, Astrophys. J. Lett. **896**, L44 (2020).

[60] D. Chatterjee, S. Ghosh, P.R. Brady, S.J. Kapadia, A.L. Miller, S. Nissanke, F. Pannarale, *A Machine Learning Based Source Property Inference for Compact Binary Mergers*, Astrophys. J. **896**, 54 (2020).

[61] B.P. Abbott, et al., *Optically Targeted Search for Gravitational Waves Emitted by Core-Collapse Supernovae During the First and Second Observing Runs of Advanced LIGO and Advanced Virgo*, Phys. Rev. D **101**, 084002 (2020).

[62] R. Hamburg, et al., *A Joint Fermi-GBM and LIGO/Virgo Analysis of Compact Binary Mergers from the First and Second Gravitational-wave Observing Runs*, Astrophys. J. **893**, 100 (2020).

[63] B.P. Abbott, et al., *A guide to LIGO-Virgo detector noise and extraction of transient gravitational-wave signals*, Class. Quant. Grav. **37**, 055002 (2020).

[64] B.P. Abbott, et al., *GW190425: Observation of a Compact Binary Coalescence with Total Mass* $\sim$ *3.4* $M_\odot$, Astrophys. J. Lett. **892**, L3 (2020).

[65] F. Acernese, et al., *The advanced Virgo longitudinal control system for the O2 observing run*, Astroparticle Physics **116**, 102386 (2020).

[66] B.P. Abbott, et al., *Model comparison from LIGO-Virgo data on GW170817's binary components and consequences for the merger remnant*, Class. Quant. Grav. **37**, 045006 (2020).

[67] F. Acernese, et al., *Increasing the Astrophysical Reach of the Advanced Virgo Detector via the Application of Squeezed Vacuum States of Light*, Phys. Rev. Lett. **123** 231108 (2019).

[68] B.P. Abbott, et al., *Search for Gravitational Waves from Scorpius X-1 in the Second Advanced LIGO Observing run with an Improved Hidden Markov Model*, Phys. Rev. D **100**, 122002 (2019). [Erratum: Phys. Rev. D **104**, 109903 (2021).]

[69] B.P. Abbott, et al., *Tests of General Relativity with the Binary Black Hole Signals from the LIGO-Virgo Catalog GWTC-1*, Phys. Rev. D **100**, 104036 (2019).

[70] K. Chatziioannou, et al., *On the properties of the massive binary black hole merger GW170729*, Phys. Rev. D **100**, 104015 (2019).

[71] B.P. Abbott, et al., *Search for gravitational-wave signals associated with gamma-ray bursts during the second observing run of Advanced LIGO and Advanced Virgo*, Astrophys. J. **886**, 75 (2019).

[72] B.P. Abbott et al., *Search for Eccentric Binary Black Hole Mergers with Advanced LIGO and Advanced Virgo during their First and Second Observing Runs*, Astrophys. J. **883**, 149 (2019).

[73] B.P. Abbott, et al., *Search for intermediate mass black hole binaries in the first and second observing runs of the Advanced LIGO and Virgo network*, Phys. Rev. D **100**, 064064 (2019).

[74] B.P. Abbott, et al., *Directional limits on persistent gravitational waves using data from Advanced LIGO's first two observing runs*, Phys. Rev. D **100**, 062001 (2019).

[75] B.P. Abbott, et al., *Search for the isotropic stochastic background using data from Advanced LIGO's second observing run*, Phys. Rev. D **100**, 061101 (2019).

[76] B.P. Abbott, et al., *Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo*, Astrophys. J. Lett. **882**, L24 (2019).

[77] B.P. Abbott, et al., *GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs*, Phys. Rev. X **9**, 031040 (2019).

[78] F. Zappa, S. Bernuzzi, F. Pannarale, M. Mapelli, N. Giacobbo, *Black-Hole Remnants from Black-Hole–Neutron-Star Mergers*, Phys. Rev. Lett. **123**, 041102 (2019).

[79] B.P. Abbott, et al., *Tests of General Relativity with GW170817*, Phys. Rev. Lett. **123**, 011102 (2019).

[80] B.P. Abbott, et al., *All-sky search for short gravitational-wave bursts in the second Advanced LIGO and Advanced Virgo run*, Phys. Rev. D **100**, 024017 (2019).

[81] B.P. Abbott, et al., *All-sky search for continuous gravitational waves from isolated neutron stars using Advanced LIGO O2 data*, Phys. Rev. D **100**, 024004 (2019).

[82] B.P. Abbott, et al., *Searches for Gravitational Waves from Known Pulsars at Two Harmonics in 2015-2017 LIGO Data*, Astrophys. J. **879**, 10 (2019). [Erratum: Astrophys. J. **882**, 73 (2019). Erratum: Astrophys. J. **889**, 170 (2020).]

[83] B.P. Abbott, et al., *Narrow-band search for gravitational waves from known pulsars using the second LIGO observing run*, Phys. Rev. D **99**, 122002 (2019).

[84] S. Ascenzi, N. De Lillo, F. Ohme, F. Pannarale, *Constraining the Neutron Star Radius with Joint Gravitational-Wave and Short Gamma-Ray Burst Observations of Neutron Star-Black Hole Coalescing Binaries*, Astrophys. J. **877**, 94 (2019).

[85] B.P. Abbott, et al., *All-sky search for long-duration gravitational-wave transients in the second Advanced LIGO observing run*, Phys. Rev. D **99**, 104033 (2019).

[86] M. Soares-Santos, et al., *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. **876**, L7 (2019).

[87] B.P. Abbott, et al., *Low-latency Gravitational-wave Alerts for Multimessenger Astronomy during the Second Advanced LIGO and Virgo Observing Run*, Astrophys. J. **875**, 161 (2019).

[88] B.P. Abbott, et al., *Search for Gravitational Waves from a Long-Lived Remnant of the Binary Neutron Star Merger GW170817*, Astrophys. J. **875**, 160 (2019).

[89] B.P. Abbott, et al., *Searches for Continuous Gravitational Waves from 15 Supernova Remnants and Fomalhaut b with Advanced LIGO*, Astrophys. J. **875**, 122 (2019). [Erratum: Astrophys. J. **918**, 91 (2021).]

[90] B.P. Abbott, et al., *Search for Transient Gravitational-wave Signals Associated with Magnetar Bursts during Advanced LIGO's Second Observing Run*, Astrophys. J. **874**, 163 (2019).

[91] B.P. Abbott, et al., *Constraining the p-Mode–g-Mode Tidal Instability with GW170817*, Phys. Rev. Lett. **122**, 061104 (2019).

[92] F. Pannarale, R. Macas, P.J. Sutton, *Bayesian Inference Analysis of Unmodelled Gravitational-Wave Transients*, Class. Quant. Grav. **36**, 035011 (2019).

[93] B.P. Abbott, et al., *Properties of the binary neutron star merger GW170817*, Phys. Rev. X **9**, 011001 (2019).

[94] T. Dietrich, et al., *Matter imprints in waveform models for neutron star binaries: tidal and self-spin effects*, Phys. Rev. D **99**, 024029 (2019).

[95] M. Fishbach, et al., *A Standard Siren Measurement of the Hubble Constant from GW170817 without the Electromagnetic Counterpart*, Astrophys. J. Lett. **871**, L13 (2019).

[96] E. Burns, et al., *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).

[97] A. Albert, et al., *Search for Multimessenger Sources of Gravitational Waves and High-energy Neutrinos with Advanced LIGO during Its First Observing Run, ANTARES, and IceCube*, Astrophys. J. **870**, 134 (2019).

[98] B.P. Abbott, et al., *Search for Subsolar-Mass Ultracompact Binaries in Advanced LIGO's First Observing Run*, Phys. Rev. Lett. **121**, 231103 (2018).

[99] A. Nagar, et al., *Time-domain effective-one-body gravitational waveforms for coalescing compact binaries with nonprecessing spins, tides and self-spin effects*, Phys. Rev. D **98**, 104052 (2018).

[100] B.P. Abbott, et al., *GW170817: Measurements of neutron star radii and equation of state*, Phys. Rev. Lett. **121**, 161101 (2018).

[101] R. Dudi, F. Pannarale, T. Dietrich, M. Hannam, S. Bernuzzi, F. Ohme, B. Brügmann, *Relevance of tidal effects and post-merger dynamics for binary neutron star parameter estimation*, Phys. Rev. D **98**, 084061 (2018).

[102] B.P. Abbott, et al., *A Search for Tensor, Vector, and Scalar Polarizations in the Stochastic Gravitational-Wave Background*, Phys. Rev. Lett. **120**, 201102 (2018). [Editors' suggestion]

[103] B.P. Abbott, et al., *Full Band All-sky Search for Periodic Gravitational Waves in the O1 LIGO Data*, Phys. Rev. D **97**, 102003 (2018).

[104] B.P. Abbott, et al., *Constraints in Cosmic Strings Using Data from the First Advanced LIGO Observing Run*, Phys. Rev. D **97**, 102002 (2018).

[105] L. London, S. Khan, E. Fauchon-Jones, C. García, X. Jiménez Forteza, M. Hannam, S. Husa, C. Kalaghatgi, F. Ohme, F. Pannarale, *First higher-multipole model of spinning binary-black-hole gravitational waveforms*, Phys. Rev. Lett. **120**, 161102 (2018).

[106] B.P. Abbott, et al., *Effects of Data Quality Vetoes on a Search for Compact Binary Coalescences in Advanced LIGO's First Observing Run*, Class. Quant. Grav. **35**, 065010 (2018).

[107] B.P. Abbott, et al., *All-sky Search for Long-duration Gravitational Wave Transients in the First Advanced LIGO observing run*, Class. Quant. Grav. **35**, 065009 (2018).

[108] B.P. Abbott, et al., *GW170817: Implications for the Stochastic Gravitational-Wave Background from Compact Binary Coalescences*, Phys. Rev. Lett. **120**, 091101 (2018).

[109] B.P. Abbott, et al., *First search for nontensorial gravitational waves from known pulsars*, Phys. Rev. Lett, **120**, 031104 (2018).

[110] B.P. Abbott, et al., *First narrow-band search for continuous gravitational waves from known pulsars in advanced detector data*, Phys. Rev. D **96**, 122006 (2017).

[111] B.P. Abbott, et al., *GW170608: Observation of a 19-Solar-Mass Binary Black Hole Coalescence*, Astrophys. J. Lett. **851**, L35 (2017).

[112] B.P. Abbott, et al., *First Low-Frequency EinsteinHome All-Sky Search for Continuous Gravitational Waves in Advanced LIGO Data*, Phys. Rev. D **96**, 122004 (2017).

[113] B.P. Abbott, et al., *Observation of Gravitational Waves from a Binary Black Hole Merger*", in *Centennial of General Relativity: A Celebration*, editor C.A.Z. Vasconcellos (2017).

[114] B.P. Abbott, et al., *Search for post-merger gravitational waves from the remnant of the binary neutron star merger GW170817*, Astrophys. J. Lett. **851**, L16 (2017).

[115] B.P. Abbott, et al., *On the Progenitor of Binary Neutron Star Merger GW170817*, Astrophys. J. Lett. **850**, L40 (2017).

[116] B.P. Abbott, et al., *Estimating the Contribution of Dynamical Ejecta in the Kilonova Associated with GW170817*, Astrophys. J. Lett. **850**, L39 (2017).

[117] B.P. Abbott, et al., *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).

[118] B.P. Abbott, et al., *A gravitational-wave standard siren measurement of the Hubble constant*, Nature Letter (2017).

[119] B.P. Abbott, et al., *Gravitational Waves and Gamma-Rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A*, Astrophys. J. Lett. **848**, L13 (2017).

[120] B.P. Abbott, et al., *Multi-messenger Observations of a Binary Neutron Star Merger*, Astrophys. J. Lett. **848**, L12 (2017).

[121] B.P. Abbott, et al., *GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral*, Phys. Rev. Lett. **119**, 161101 (2017).

[122] B.P. Abbott, et al., *GW170814: A Three-Detector Observation of Gravitational Waves from a Binary Black Hole Coalescence*, Phys. Rev. Lett. **119**, 141101 (2017).

[123] B.P. Abbott, et al., *Upper Limits on Gravitational Waves from Scorpius X-1 from a Model-Based Cross-Correlation Search in Advanced LIGO Data*, Astrophys. J. **847**, 47 (2017).

[124] B.P. Abbott, et al., *All-sky Search for Periodic Gravitational Waves in the O1 LIGO Data*, Phys. Rev. D **96**, 062002 (2017).

[125] A. Albert, et al., *Search for High-energy Neutrinos from Gravitational Wave Event GW151226 and Candidate LVT151012 with ANTARES and IceCube*, Phys. Rev. D **96**, 022005 (2017).

[126] B.P. Abbott, et al., *Search for Intermediate Mass Black Hole Binaries in the First Observing Run of Advanced LIGO*, Phys. Rev. D **96**, 022001 (2017).

[127] B.P. Abbott, et al., *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).

[128] B.P. Abbott, et al., *GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2*, Phys. Rev. Lett. **118**, 221101 (2017).

[129] B.P. Abbott, et al., *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**, 89 (2017).

[130] B.P. Abbott, et al., *Effects of Waveform Model Systematics on the Interpretation of GW150914*, Class. Quant. Grav. **34**, 104002 (2017).

[131] B.P. Abbott, et al., *Search for continuous gravitational waves from neutron stars in globular cluster NGC 6544*, Phys. Rev. D **95**, 082005 (2017).

[132] B.P. Abbott, et al., *First Search For GWs From Known Pulsars With Advanced LIGO*, Astrophys. J. **839**, 12 (2017). [Erratum: Astrophys. J. **851**, 71 (2017).]

[133] B.P. Abbott, et al., *Calibration of the Advanced LIGO detectors for the discovery of the binary black-hole merger GW150914*, Phys. Rev. D **95**, 062003 (2017).

[134] C. Biwer, et al., *Validating gravitational-wave detections: The Advanced LIGO hardware injection system*, Phys. Rev. D **95**, 062002 (2017).

[135] B.P. Abbott, et al., *Directional Limits On Persistent GWs From Advanced LIGO's First Observing Run*, Phys. Rev. Lett. **118**, 121102 (2017).

[136] B.P. Abbott, et al., *Upper Limits On The Stochastic GW Background From Advanced LIGO's First Observing Run*, Phys. Rev. Lett. **118**, 121101 (2017).

[137] B.P. Abbott, et al., *Exploring the Sensitivity of Next Generation Gravitational Wave Detectors*, Class. Quant. Grav. **34**, 044001 (2016).

[138] B.P. Abbott, et al., *All-Sky Search for Short Gravitational-Wave Bursts in the First Advanced LIGO Run*, Phys. Rev. D **95**, 042003 (2016).

[139] B.P. Abbott, et al., *The Basic Physics Of The Binary Black Hole Merger GW150914*, Annalen der Physik, Volume 529, Issue 1-2, January 2017, 1600209.

[140] B.P. Abbott, et al., *Supplement: The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914*, Astrophys. J. Supp. Ser. **227**, 14 (2016).

[141] B.P. Abbott, et al., *The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914*, Astrophys. J. **833**, 1 (2016).

[142] B.P. Abbott, et al., *Upper limits on the rates of binary neutron star and neutron-star–black-hole mergers from Advanced LIGO's first observing run*, Astrophys. J. Lett. **832**, 21 (2016).

[143] B.P. Abbott, et al., *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).

[144] B.P. Abbott, et al., *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).

[145] B.P. Abbott, et al., *Binary Black Hole Mergers in the first Advanced LIGO Observing Run*, Phys. Rev. X **6**, 041015 (2016).

[146] B.P. Abbott, et al., *Improved analysis of GW150914 using a fully spin-precessing waveform model*, Phys. Rev. X **6**, 041014 (2016).

[147] B.P. Abbott, et al., *Directly comparing GW150914 with numerical solutions of Einstein's equations for binary black hole coalescence*, Phys. Rev. D **94**, 064035 (2016).

[148] B.P. Abbott, et al., *Comprehensive All-sky Search for Periodic Gravitational Waves in the Sixth Science Run LIGO Data*, Phys. Rev. D **94**, 042002 (2016).

[149] B.P. Abbott, et al., *Supplement: "Localization and broadband follow-up of the gravitational-wave transient GW150914"*, Astrophys. J. Supp. Ser. **225**, 8 (2016).

[150] B.P. Abbott, et al., *Localization and broadband follow-up of the gravitational-wave transient GW150914*, Astrophys. J. **826**, L13 (2016).

[151] B.P. Abbott, et al., *Characterization of transient noise in Advanced LIGO relevant to gravitational wave signal GW150914*, Class. Quant. Grav. **33**, 134001 (2016).

[152] S. Adrián-Martínez, et al., *High-energy Neutrino follow-up search of Gravitational Wave Event GW150914 with ANTARES and IceCube*, Phys. Rev. D **93**, 122010 (2016). [Editors' suggestion highlight]

[153] B.P. Abbott, et al., *Search for transient gravitational waves in coincidence with short duration radio transients during 2007-2013*, Phys. Rev. D **93**, 122008 (2016).

[154] B.P. Abbott, et al., *GW151226: Observation of Gravitational Waves from a 22 Solar-mass Binary Black Hole Coalescence*, Phys. Rev. Lett. **116**, 241103 (2016). [Editors' suggestion highlight]

[155] B.P. Abbott, et al., *Properties of the binary black hole merger GW150914*, Phys. Rev. Lett. **116**, 241102 (2016). [Editors' suggestion highlight]

[156] B.P. Abbott, et al., *GW150914: First results from the search for binary black hole coalescence with Advanced LIGO*, Phys. Rev. D **93**, 122003 (2016). [Editors' suggestion highlight]

[157] B.P. Abbott, et al., *Observing gravitational-wave transient GW150914 with minimal assumptions*, Phys. Rev. D **93**, 122004 (2016). [Editors' suggestion highlight]

[158] B.P. Abbott, et al., *Tests of general relativity with GW150914*, Phys. Rev. Lett. **116**, 221101 (2016). [Editors' suggestion highlight; selected for a Viewpoint in Physics]

[159] B.P. Abbott, et al., *GW150914: The Advanced LIGO Detectors in the Era of First Discoveries*, Phys. Rev. Lett. **116**, 131103, (2016). [Editors' suggestion highlight]

[160] B.P. Abbott, et al., *GW150914: Implications for the stochastic gravitational wave background from binary black holes*, Phys. Rev. Lett. **116**, 131102, (2016). [Editors' suggestion highlight]

[161] J. Aasi, et al., *First low frequency all-sky search for continuous gravitational wave signals*, Phys. Rev. D **93**, 042007 (2016).

[162] B.P. Abbott, et al., *Astrophysical Implications of the Binary Black Hole Merger GW150914*, Astrophys. J. **818**, L22 (2016).

[163] J. Aasi, et al., *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).

[164] J. Aasi, et al., *All-sky search for long-duration gravitational wave transients with LIGO*, Phys. Rev. D **93**, 042005 (2016).

[165] B.P. Abbott, et al., *Observation of Gravitational Waves from a Binary Black Hole Merger*, Phys. Rev. Lett. **116**, 061102, (2016). [Editors' suggestion highlight; selected for a Viewpoint in Physics]

[166] J. Aasi, et al., *Searches for continuous gravitational waves from nine young supernova remnants*, Astrophys. J. **813**, 39 (2015). [Erratum: Astrophys. J. **918**, 90 (2021).]

[167] F. Pannarale, E. Berti, K. Kyutoku, B. Lackey, M. Shibata, *Gravitational-wave cutoff frequencies of tidally disruptive neutron star-black hole binary mergers*, Phys. Rev. D **92**, 081504 (2015).

[168] F. Pannarale, E. Berti, K. Kyutoku, B. Lackey, M. Shibata, *Aligned spin neutron star-black hole mergers: a gravitational waveform amplitude model*, Phys. Rev. D **92**, 084050 (2015).

[169] M. Dominik, E. Berti, R. O'Shaughnessy, I. Mandel, K. Belczynski, C. Fryer, D. Holz, T. Bulik, F. Pannarale, *Double Compact Objects III: Gravitational Wave Detection Rates*, Astrophys. J. **806**, 263 (2015).

[170] J. Aasi, et al., *Advanced LIGO*, Class. Quant. Grav. **32**, 074001 (2015).

[171] J. Aasi, et al., *Directed search for gravitational waves from Scorpius X-1 with initial LIGO*, Phys. Rev. D **91**, 062008 (2015).

[172] J. Aasi, et al., *Narrow-band search of continuous gravitational-wave signals from Crab and Vela pulsars in Virgo VSR4 data*, Phys. Rev. D **91**, 022004 (2015).

[173] A. Maselli, L. Gualtieri, F. Pannarale, V. Ferrari, *On the validity of the adiabatic approximation in compact binary inspirals*, Thirteenth Marcel Grossmann Meeting: pp. 951-953 (2015).

[174] F. Pannarale, F. Ohme, *Prospects for joint gravitational-wave and electromagnetic observations of neutron-star–black-hole coalescing binaries*, Astrophys. J. **791**, L7 (2014). **Highlighted on** motherboard.vice.com **and** phys.org**.**

[175] N. Korsakova, C. Messenger, F. Pannarale, M. Hewitson, M. Armano, *Data Analysis Methods for Testing Alternative Theories of Gravity with LISA Pathfinder*, Phys. Rev. D **89**, 123511 (2014).

[176] F. Pannarale, *Black Hole Remnant of Black Hole-Neutron Star Coalescing Binaries with arbitrary black hole spin*, Phys. Rev. D **89**, 044045 (2014).

[177] B. Haskell, R. Ciolfi, F. Pannarale, L. Rezzolla, *On the universality of I-Love-Q relations in magnetized neutron stars*, Monthly Notices of the Royal Astronomical Society: Letters, **438**, L71 (2014) [see NewCompStar outreach article http://compstar.uni-frankfurt.de/outreach/short-articles/i-love-q-universality-in-properties-of-neutron-stars/].

[178] F. Pannarale, *Black Hole Remnant of Black Hole-Neutron Star Coalescing Binaries*, Phys. Rev. D **88**, 104025 (2013).

[179] F. Pannarale, E. Berti, K. Kyutoku, M. Shibata, *Nonspinning black hole-neutron star mergers: A model for the amplitude of gravitational waveforms*, Phys. Rev. D **88**, 084011 (2013). **A Mathematica package that implements this model is publicly available at** http://www.phy.olemiss.edu/~berti/research/PhenomNSBH.tgz.

[180] A. Maselli, L. Gualtieri, F. Pannarale, V. Ferrari, *On the validity of the adiabatic approximation in compact binary inspirals*, Phys. Rev. D **86**, 044032 (2012).

[181] F. Pannarale, L. Rezzolla, F. Ohme, J. S. Read, *Will black hole-neutron star inspirals tell us about the neutron star equation of state?*, Phys. Rev. D **84**, 104017 (2011).

[182] F. Pannarale, A. Tonita, L. Rezzolla, *Black hole-neutron star mergers and short GRBs: a relativistic toy model to estimate the mass of the torus*, Astrophys. J. **727**, 95 (2011).

[183] V. Ferrari, L. Gualtieri, F. Pannarale, *Black Hole-Neutron Star Coalescing Binaries*, Int. J. Mod. Phys. D **19**, 1241 (2010).

[184] V. Ferrari, L. Gualtieri, F. Pannarale, *Neutron star tidal disruption in mixed binaries: the imprint of the equation of state*, Phys. Rev. D **81**, 064026 (2010).

[185] V. Ferrari, L. Gualtieri, F. Pannarale, *A Semi-relativistic Model for Tidal Interactions in BH-NS Coalescing Binaries*, Class. Quant. Grav. **26**, 125004 (2009).