

# Riccardo Buscicchio | Publication list

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## Publications:

- 32 short-author papers published in major peer-reviewed journals  
(out of which 8 first-authored papers and 8 lead by supervised student).
- 13 collaboration papers with substantial contribution, published in major peer-reviewed journals
- 60 collaboration papers in total, published in major peer-reviewed journals
  - 8 papers in submission stage,
  - 2 other publications (thesis, white papers, reviews)

Total number of citations: >17000. h-index: 25 (from ADS and iNSPIRE record).

Web links to list services: [ADS](#); [iNSPIRE](#); [arXiv](#); [orcid](#).

## Submitted short-author and collaboration papers which I have substantially contributed to:

Supervised students publications marked with \*.

- 8.\* *samsara: A Continuous-Time Markov Chain Monte Carlo Sampler for Trans-Dimensional Bayesian Analysis.*  
G. Astorino, L. Valbusa Dall'Armi, **R. Buscicchio**, J. Pomper, A. Ricciardone, W. Del Pozzo.  
[arXiv:2511.07385 \[stat.CO\]](#).
- 7. *The first year of LISA Galactic foreground.*  
**R. Buscicchio**, F.Pozzoli, D.Chirico, A.Sesana.  
[arXiv:2511.03604 \[astro-ph.IM\]](#).
- 6. *Functional inference on deviations from General Relativity.*  
C. Pacilio, **R. Buscicchio**.  
[arXiv:2507.13454 \[gr-qc\]](#).
- 5. *GWTC-4.0: Updating the Gravitational-Wave Transient Catalog with Observations from the First Part of the Fourth LIGO-Virgo-KAGRA Observing Run.*  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
[arXiv:2508.18082 \[gr-qc\]](#).
- 4. *Comparing astrophysical models to gravitational-wave data in the observable space.*  
A. Toubiana, D. Gerosa, M. Mould, S. Rinaldi, M. Arca Sedda, T. Bruel, **R. Buscicchio**, J. Gair, L. Paiella, F. Santoliquido, R. Tenorio, C. Ugolini.  
[arXiv:2507.13249 \[gr-qc\]](#).
- 3.\* *Bahamas: BAyesian inference with HAmiltonian Montecarlo for Astrophysical Stochastic background.*  
F. Pozzoli, **R. Buscicchio**, A. Klein, D. Chirico.  
[arXiv:2506.22542 \[astro-ph.IM\]](#).
- 2. *LISA Definition Study Report.*  
M. Colpi, K. Danzmann, M. Hewitson, K. Holley-Bockelmann, et al. (incl. **R. Buscicchio**).  
[arXiv:2402.07571 \[astro-ph.CO\]](#).
- 1. *The last three years: multiband gravitational-wave observations of stellar-mass binary black holes.*  
A. Klein, G. Pratten, **R. Buscicchio**, P. Schmidt, C. J. Moore, E. Finch, A. Bonino, L. M. Thomas, N. Williams, D. Gerosa, S. McGee, M. Nicholl, A. Vecchio.  
[arXiv:2204.03423 \[astro-ph.HE\]](#).

## Short-author papers published in major peer-reviewed journals:

Supervised students publications marked with \*.

- 32.\* *Environmental effects in the LISA stochastic signal from stellar-mass black hole binaries.*  
R. Chen, R. S. Chandramouli, F. Pozzoli, **R. Buscicchio**, E. Barausse.  
*Physical Review D* 112, (2025) 084053. [arXiv:2507.00694 \[gr-qc\]](#).
- 31. *Variability in the massive black hole binary candidate SDSS J2320+0024: no evidence for periodic modulation.*  
F. Rigamonti, L. Bertassi, **R. Buscicchio**, F. Cocchiararo, S. Covino, M. Dotti, A. Sesana, P. Severgnini.  
*Astronomy & Astrophysics* 702 (2025) A242. [arXiv:2505.22706 \[astro-ph.GA\]](#).

- 30.\* *Is the stochastic signal really detectable?*.  
 F. Pozzoli, J. Gair, **R. Buscicchio**, L. Speri.  
*Physical Review D* 112, (2025) 064035. arXiv:2412.10468 [astro-ph.IM].
29. *A test for LISA foreground Gaussianity and stationarity. I. Galactic white-dwarf binaries.*  
**R. Buscicchio**, A. Klein, V. Korol, F. Di Renzo, C.J. Moore, D. Gerosa, A. Carzaniga.  
*European Physical Journal C* 85, (2025) 887. arXiv:2410.08263 [astro-ph.HE].
- 28.\* *Accelerating LISA inference with Gaussian processes.*  
 J. El Gammal, **R. Buscicchio**, G. Nardini, J. Torrado.  
*Physical Review D* 112, (2025) 063010. arXiv:2503.21871 [astro-ph.HE].
- 27.\* *Test for LISA foreground Gaussianity and stationarity: extreme mass-ratio inspirals.*  
 M. Piarulli, **R. Buscicchio**, F. Pozzoli, O. Burke, M. Bonetti, A. Sesana.  
*Physical Review D* 111, (2025) 103047. arXiv:2410.08862 [astro-ph.HE].
- 26.\* *Cyclostationary signals in LISA: a practical application to Milky Way satellites.*  
 F. Pozzoli, **R. Buscicchio**, A. Klein, V. Korol, A. Sesana, F. Haardt.  
*Physical Review D* 111, (2025) 063005. arXiv:2410.08274 [astro-ph.GA].
25. *Characterization of non-Gaussian stochastic signals with heavier-tailed likelihoods.*  
 N. Karnesis, A. Sasli, **R. Buscicchio**, N. Stergioulas.  
*Physical Review D* 111, (2025) 022005. arXiv:2410.14354 [gr-qc].
24. *Stellar-mass black-hole binaries in LISA: characteristics and complementarity with current-generation interferometers.*  
**R. Buscicchio**, J. Torrado, C. Caprini, G. Nardini, M. Pieroni, N. Karnesis, A. Sesana.  
*Journal of Cosmology and Astroparticle Physics* 01 (2025) 084. arXiv:2410.18171 [astro-ph.HE].
- 23.\* *Stars or gas? Constraining the hardening processes of massive black-hole binaries with LISA.*  
 A. Spadaro, **R. Buscicchio**, D. Izquierdo-Villalba, D. Gerosa, A. Klein, G. Pratten.  
*Physical Review D* 111, (2025) 023004. arXiv:2409.13011 [astro-ph.HE].
22. *Partial alignment between jets and megamasers: coherent or selective accretion?.*  
 M. Dotti, **R. Buscicchio**, F. Bollati, R. Decarli, W. Del Pozzo, A. Franchini.  
*Astronomy & Astrophysics* 692 (2024) A233. arXiv:2403.18002 [astro-ph.GA].
21. *Expected insights on type Ia supernovae from LISA's gravitational wave observations.*  
 V. Korol, **R. Buscicchio**, Ruediger Pakmor, Javier Morán-Fraile, Christopher J. Moore, Selma E. de Mink.  
*Astronomy & Astrophysics* 691 (2024) A44. arXiv:2407.03935 [astro-ph.HE].
- 20.\* *A weakly-parametric approach to stochastic background inference in LISA.*  
 F. Pozzoli, **R. Buscicchio**, C. J. Moore, A. Sesana, F. Haardt, A. Sesana.  
*Physical Review D* 109, (2024) 083029. arXiv:2311.12111 [astro-ph.CO].
19. *A fast test for the identification and confirmation of massive black hole binary.*  
 M. Dotti, F. Rigamonti, S. Rinaldi, W. Del Pozzo, R. Decarli, **R. Buscicchio**.  
*Astronomy & Astrophysics* 680 (2023) A69. arXiv:2310.06896 [astro-ph.HE].
- 18.\* *Glitch systematics on the observation of massive black-hole binaries with LISA.*  
 A. Spadaro, **R. Buscicchio**, D. Vetrugno, A. Klein, D. Gerosa, S. Vitale, R. Dolesi, W. J. Weber, M. Colpi.  
*Physical Review D* 108 (2023) 123029. arXiv:2306.03923 [gr-qc].
17. *Implications of pulsar timing array observations for LISA detections of massive black hole binaries.*  
 N. Steinle, H. Middleton, C. J. Moore, S. Chen, A. Klein, G. Pratten, **R. Buscicchio**, E. Finch, A. Vecchio.  
*Monthly Notices of the Royal Astronomical Society* 525 2 (2023). arXiv:2305.05955 [astro-ph.HE].
16. *Parameter estimation of binary black holes in the endpoint of the up-down instability.*  
 V. De Renzis, D. Gerosa, M. Mould, **R. Buscicchio**, L. Zanga.  
*Physical Review D* 108 (2023) 024024. arXiv:2304.13063 [gr-qc].
15. *Improved detection statistics for non Gaussian gravitational wave stochastic backgrounds.*  
 M. Ballelli, **R. Buscicchio**, B. Patricelli, A. Ain, G. Cella.  
*Physical Review D* 107 (2023) 124044. arXiv:2212.10038 [gr-qc].
14. *Detecting non-Gaussian gravitational wave backgrounds: a unified framework.*  
**R. Buscicchio**, A. Ain, M. Ballelli, G. Cella, B. Patricelli.  
*Physical Review D* 107 (2023) 063027. arXiv:2209.01400 [gr-qc].
13. *Detectability of a spatial correlation between stellar-mass black hole mergers and Active Galactic Nuclei in the Local Universe.*  
 N. Veronesi, E.M. Rossi, S. van Velzen, **R. Buscicchio**.  
*Monthly Notices of the Royal Astronomical Society* 514 2 (2023). arXiv:2203.05907 [astro-ph.HE].

12. Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.  
**R. Buscicchio**, A. Klein, E. Roebber, C. J. Moore, D. Gerosa, E. Finch, A. Vecchio.  
*Physical Review D* 104 (2021) 044065. arXiv:2106.05259 [astro-ph.HE].
11. An Interactive Gravitational-Wave Detector Model for Museums and Fairs.  
S. J. Cooper, A. C. Green, H. R. Middleton, C. P. L. Berry, **R. Buscicchio**, E. Butler, C. J. Collins, C. Gettings, D. Hoyland, A. W. Jones, J. H. Lindon, I. Romero-Shaw, S. P. Stevenson, E. P. Takeva, S. Vinciguerra, A. Vecchio, C. M. Mow-Lowry, A. Freise.  
*American Journal of Physics* 89 (2021) 702–712. arXiv:2004.03052 [physics.ed-ph].
10. Evidence for hierarchical black hole mergers in the second LIGO–Virgo gravitational-wave catalog.  
C. Kimball, C. Talbot, C.P.L. Berry, M. Zevin, E. Thrane, V. Kalogera, **R. Buscicchio**, M. Carney, T. Dent, H. Middleton, E. Payne, J. Veitch, D. Williams .  
*Astrophysical Journal Letters* 915 (2021) L35. arXiv:2011.05332 [astro-ph.HE].
9. Testing general relativity with gravitational-wave catalogs: the insidious nature of waveform systematics.  
C. J. Moore, E. Finch, **R. Buscicchio**, D. Gerosa.  
*iScience* 24 (2021) 102577. arXiv:2103.16486 [gr-qc].
8. LoCuSS: The splashback radius of massive galaxy clusters and its dependence on cluster merger history.  
M. Bianconi, **R. Buscicchio**, G. P. Smith, S. L. McGee, C.P. Haines, A. Finoguenov, A. Babul.  
*Astrophysical Journal* 911 (2021) 136. arXiv:2010.05920 [astro-ph.GA].
7. Search for Black Hole Merger Families.  
D. Veske, A. G. Sullivan, Z. Marka, I. Bartos, K. R. Corley, J. Samsing, **R. Buscicchio**, S. Marka.  
*Astrophysical Journal Letters* 907 (2021) L48. arXiv:2011.06591 [astro-ph.HE].
6. Constraining the lensing of binary black holes from their stochastic background.  
**R. Buscicchio**, C. J. Moore, G. Pratten, P. Schmidt, M. Bianconi, A. Vecchio.  
*Physical Review Letters* 125 (2020) 141102. arXiv:2006.04516 [astro-ph.CO].
5. Constraining the lensing of binary neutron stars from their stochastic background.  
**R. Buscicchio**, C. J. Moore, G. Pratten, P. Schmidt, A. Vecchio.  
*Physical Review D* 102 (2020) 081501 . arXiv:2008.12621 [astro-ph.HE].
4. Measuring precession in asymmetric compact binaries.  
G. Pratten, P. Schmidt, **R. Buscicchio**, L. M. Thomas.  
*Physical Review Research* 2 (2020) 043096. arXiv:2006.16153 [gr-qc].
3. Populations of double white dwarfs in Milky Way satellites and their detectability with LISA.  
V. Korol, S. Toonen, A. Klein, V. Belokurov, F. Vincenzo, **R. Buscicchio**, D. Gerosa, C. J. Moore, E. Roebber, E. M. Rossi, A. Vecchio.  
*Astronomy & Astrophysics* 638 (2020) A153. arXiv:2002.10462 [astro-ph.GA].
2. Milky Way satellites shining bright in gravitational waves.  
E. Roebber, **R. Buscicchio**, A. Vecchio, C. J. Moore, A. Klein, V. Korol, S. Toonen, D. Gerosa, J. Goldstein, S. M. Gaebel, T. E. Woods.  
*Astrophysical Journal Letters* 894 (2020) L15. arXiv:2002.10465 [astro-ph.GA].
1. Label Switching Problem in Bayesian Analysis for Gravitational Wave Astronomy.  
**R. Buscicchio**, E. Roebber, J. M. Goldstein, C. J. Moore .  
*Physical Review D* 100 (2019) 084041. arXiv:1907.11631 [astro-ph.IM].

### **Collaboration papers, with substantial contribution, published in major peer-reviewed journals:**

13. Search for gravitational-lensing signatures in the full third observing run of the LIGO-Virgo network.  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
*Astrophysical Journal* 970 (2021) 191. arXiv:2304.08393 [gr-qc].
12. GWTC-2.1: Deep Extended Catalog of Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run.  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
*Physical Review D* 109 (2024) 022001. arXiv:2108.01045 [gr-qc].
11. The population of merging compact binaries inferred using gravitational waves through GWTC-3.  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
*Physical Review X* 13 (2021) 011048. arXiv:2111.03634 [astro-ph.HE].
10. Tests of General Relativity with GWTC-3.  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
*Physical Review D* (in press). arXiv:2112.06861 [gr-qc].

9. *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run.*  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
[Astrophysical Journal Letters](#) (2021) 923. arXiv:2105.06384 [gr-qc].
8. *GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run.*  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
[Physical Review X](#) 13 (2023) 041039. arXiv:2111.03606 [gr-qc].
7. *Observation of gravitational waves from two neutron star-black hole coalescences.*  
LIGO Scientific Collaboration, Virgo Collaboration.  
[Astrophysical Journal Letters](#), 915, L5 (2021). arXiv:2106.15163 [astro-ph.HE].
6. *GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run.*  
LIGO Scientific Collaboration, Virgo Collaboration.  
[Physical Review X](#) 11 (2021) 021053. arXiv:2010.14527 [gr-qc].
5. *Population Properties of Compact Objects from the Second LIGO-Virgo Gravitational-Wave Transient Catalog.*  
LIGO Scientific Collaboration, Virgo Collaboration.  
[Astrophysical Journal Letters](#) 913 (2021) L7. arXiv:2010.14533 [astro-ph.HE].
4. *Upper Limits on the Isotropic Gravitational-Wave Background from Advanced LIGO's and Advanced Virgo's Third Observing Run.*  
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.  
[Physical Review D](#) 104 (2021) 022004. arXiv:2101.12130 [gr-qc].
3. *Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo .*  
LIGO Scientific Collaboration, Virgo Collaboration.  
[Astrophysical Journal](#) 882 (2019) L24. arXiv:1811.12940 [astro-ph.HE].
2. *Properties and astrophysical implications of the 150 Msun binary black hole merger GW190521.*  
LIGO Scientific Collaboration, Virgo Collaboration.  
[Astrophysical Journal Letters](#) 900 (2020) L13. arXiv:2009.01190 [astro-ph.HE].
1. *GW190521: A Binary Black Hole Merger with a Total Mass of  $150 M_{\odot}$ .*  
LIGO Scientific Collaboration, Virgo Collaboration.  
[Physical Review Letters](#) 125 (2020) 101102. arXiv:2009.01075 [gr-qc].

#### Other publications:

2. *LISA - Laser Interferometer Space Antenna - Definition Study Report.*  
The European Space Agency.  
[ESA-SCI-DIR-RP-002](#).
1. *Topics in Bayesian population inference for gravitational wave astronomy.*  
**R. Buscicchio.**  
PhD thesis.