Riccardo **Buscicchio** | Publication list

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Publications:

32 short-author papers published in major peer-reviewed journals
(out of which **7** first-authored papers and **8** lead by supervised student).
13 collaboration papers with substantial contribution, published in major peer-reviewed journals
47 collaboration papers in total, published in major peer-reviewed journals
5 papers in submission stage,
2 other publications (thesis, white papers, reviews)

Total number of citations: >15900. **h-index**: 24 (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.:

5. *Functional inference on deviations from General Relativity.*
C. Pacilio, **R. Buscicchio**.
arXiv:2507.13454[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 in major peer-reviewed journals:

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), (in press). 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 (2025), (in press). arXiv:2505.22706[astro-ph.GA].

30. *Is your 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 in major peer-reviewed journals, which I have substantially contributed to.:

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].

PhD thesis, technical reports.:

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.