

Riccardo Buscicchio | Curriculum Vitae

riccardo.buscicchio@unimib.it • www.riccardobuscicchio.com • 13 dicembre 2025

Astrofisico relativista, analisi avanzata di dati e framework statistici per inferenza bayesiana e frequentista. Modellazione di missioni spaziali, rilevazione di segnali e stima di parametri in astronomia a onde gravitazionali. Lensing di onde gravitazionali. Inferenza di popolazione, ricerche di fondo stocastico. Morfologia della Via Lattea, precursori di supernove, inferenza di modelli di accrescimento di buchi neri supermassicci.

Contatti

Email: riccardo.buscicchio@unimib.it

Indirizzo: Università degli Studi di Milano-Bicocca, Piazza della Scienza 3, 20126 Milano, Italy.

Nazionalità: Italy

Sito web e registro pubblicazioni: www.riccardobuscicchio.com – [arXiv](https://arxiv.org/) – [ORCID](https://orcid.org/)

Posizioni accademiche

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| Università degli Studi di Milano-Bicocca | Milan, Italy |
| Postdoc (Assegnista di ricerca), Department of Physics "G.Occhialini" | 2021 - 2024 |
| ◦ Attività principale: development of LISA data analysis ground-segment for the Italian Space Agency (Phase A). | |
| Università degli Studi di Milano-Bicocca | Milan, Italy |
| Postdoc (Assegnista di ricerca), Department of Physics "G.Occhialini" | 2024 - current |
| ◦ Attività principale: development of LISA data analysis ground-segment for the Italian Space Agency (Phase B). | |

Istruzione

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| University of Birmingham | Birmingham, UK |
| Ph.D., School of Physics & Astronomy | 2017-13/07/2022 |
| ◦ Supervisore: A. Vecchio. Thesis resulted in 6 short-author publications. | |
| ◦ Titolo della tesi: Topics in Bayesian population inference for Gravitational Wave Astronomy | |

Questa tesi esplora diversi argomenti relativi all'inferenza bayesiana nell'astronomia a onde gravitazionali. Dall'inferenza gerarchica sulla popolazione di fusioni di buchi neri binari di massa stellare, allo sviluppo di una routine di stima dei parametri end-to-end per interferometri spaziali. Altri argomenti sono investigati: popolazione di nane bianche binarie in galassie satelliti della Via Lattea; vincoli dal fondo stocastico sul lensing di onde gravitazionali da fusioni di stelle di neutroni binarie e buchi neri binari; tecniche statistiche per l'inferenza simultanea su più sorgenti indistinguibili.

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| Università degli Studi di Pisa | Pisa, Italy |
| Master's degree in Theoretical physics | 2013-2016 |
| ◦ Voto finale: 110/110 | |
| ◦ Supervisore: G. Cella. Thesis resulted in one short-author publications. | |
| ◦ Titolo della tesi: An improved detector for non-gaussian stochastic background of gravitational waves. | |

Questa tesi ha esplorato l'idea di utilizzare il formalismo funzionale dei processi stocastici e della teoria classica dei campi per sviluppare un nuovo algoritmo di rilevazione, con prestazioni migliorate, per fondi stocastici non gaussiani di onde gravitazionali.

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| Columbia University | New York NY, USA |
| INFN-NSF Summer Internship | Jun-Sept 2013 |
| ◦ Supervisore: S. Marka, I. Bartos. | |

Abbiamo stimato il contributo al livello di rumore nei rivelatori terrestri di seconda e terza generazione dovuto alle docce di raggi cosmici primari e secondari che colpiscono gli specchi dell'interferometro.

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| Università degli Studi di Pisa | Pisa, Italy |
| Bachelor's degree in Physics | 2008-2012 |

- *Voto finale*: 109/110.
- *Titolo della tesi*: Template banks for gravitational wave detection: an application of Information Geometry.

Questa tesi ha esplorato l'idea di utilizzare il formalismo della geometria differenziale (come definito nel contesto della teoria dell'informazione) per sviluppare un algoritmo di posizionamento di template sullo spazio dei parametri delle sorgenti con struttura di varietà non banale.

Metriche

Pubblicazioni:

- 32** articoli a lista d'autori corta pubblicati in riviste scientifiche peer-reviewed (di cui **8** articoli come primo autore and **8** guidati da studente supervisionato).
- 13** articoli di collaborazione con contributo sostanziale, pubblicati in riviste scientifiche peer-reviewed
- 60** articoli di collaborazione in totale, pubblicati in riviste scientifiche peer-reviewed
- 8** articoli in fase di sottomissione,
- 2** altre pubblicazioni (tesi, white papers, reviews)

Numero totale di citazioni: >17000. **indice h**: 25 (from ADS and INSPIRE record).

Collegamenti web ai servizi di elenco: [ADS](#); [INSPIRE](#); [arXiv](#); [orcid](#).

Elenco completo delle pubblicazioni disponibile qui sotto e at www.riccardobuscicchio.com/publications.

Elenco completo delle presentazioni disponibile qui sotto e at www.riccardobuscicchio.com/talks.

Codici e Dataset

Titolo	Codice	Dataset	DOI Zenodo	Pubblico
◦ Bahamas Galactic Foreground	✓	✓	10.5281/zenodo.17527235	✓
◦ Bahamas	✓		10.5281/zenodo.16087705	✓
◦ Hypertriangulation Map	✓		10.5281/zenodo.13897708	✓
◦ Bayesian PowerLaw Sensitivity	✓	✓	10.5281/zenodo.14384633	✓
◦ Milky Way Satellites		✓	10.5281/zenodo.3668904	✓
◦ LISA stellar BBH catalogues and samples	✓	✓	10.5281/zenodo.14426778	✓
◦ LISA MBHB catalogues and samples		✓	10.5281/zenodo.13787674	✓
◦ Chirp Gravitational Wave Alerts	✓		10.5281/zenodo.3525063	✓

Borse, Premi e Riconoscimenti

Premi di carriera:

- Braccini PhD Thesis Prize, Gravitational Wave International Committee honorable mention. 2021
- Michael Penston PhD Thesis Prize, Royal Astronomical Society runner-up prize. 2021

Grants:

- Royal Society of Edinburgh "Gravity under the lens" (col, PI Dr. Berry, Univ. of Glasgow, UK) 2025-2027
- EuroHPC PRACE "LABELFIT" proposal, 224k CPUh on Leonardo DCGP 2025
- EuroHPC PRACE "LISA-FIT" proposal, 100k CPUh on Leonardo BOOSTER 2023
- Google Cloud for Researchers, 4kEUR Google Cloud Research Credits 2023
- CINECA ISCRA Type-C project "LISA-MW" proposal, 10k CPUh at the Italian National HPC center. 2022
- Grant di viaggio, Horizon 2020 AHEAD 2020 (High Energy Astrophysics) 2021
- Grant di viaggio, American Physical Society, DGRAV Student Travel Grant 2020
- Grant di viaggio, Institute of Physics Student Travel fund 2019
- Grant di viaggio, Royal Astronomical Society, UK. 2018

Visite di ricerca su invito:

- Kavli visitor program research visit — DAMTP Univ. Cambridge, Cambridge, UK 07/10/2024-18/10/2024
- Visita di ricerca — Max Planck Institute for Astrophysics, Garching, DE 23/11/2023-30/11/2023
- Visita di ricerca — Albert Einstein Institute, Potsdam, DE 16/04/2023-23/04/2023
- Visita di ricerca — Univ. of Stavanger, Stavanger, NO 08/02/2023-29/03/2023
- AHEAD 2020 program research visit — APC, Univ. Paris Diderot, Paris, FR 01/12/2023-07/01/2023

○ Visita di ricerca — APC, Univ. Paris Diderot, Paris, FR	26/10/2022-30/11/2022
○ Visita di ricerca — Univ. of Stavanger, Stavanger, NO	26/09/2022-19/10/2022
○ Visita di ricerca — Univ. of Birmingham, Birmingham, UK	05/07/2022-10/07/2022
○ Visita di ricerca — Columbia University, New York, US	06/04/2022-13/04/2022

Supervisione studenti

Secondo le attuali normative nazionali, in qualità di assegnista di ricerca non posso essere ufficialmente nominato supervisore di studenti a nessun livello. Tuttavia, previo accordo con il personale permanente competente, ho supervisionato il lavoro degli studenti nelle percentuali indicate di seguito.

Ph.D. student co-supervisor:

○ B. Saiguhan, University of Milano-Bicocca, PhD, 100%	2025-2028
○ L. Viganò, University of Milano-Bicocca, PhD, 80%	2025-2028
○ F. Nobili, University of Insubria, PhD, 100%	2024-2027
○ A. Spadaro, University of Milano-Bicocca, PhD, 100%	2022-2025
○ F. Pozzoli, University of Insubria, PhD, 100%	2022-2025

MSc student co-supervision:

○ R. Bosoni De Martini, University of Milano-Bicocca, Master's thesis, 100%	2025-2026
○ L. Viganò, University of Milano-Bicocca, Master's thesis, 100% (now PhD student at Univ. of Milano-Bicocca)	2024-2025
○ M. Bellotti, University of Milano-Bicocca, Master's thesis, 100% (now PhD student at Observatoire Cote d'Azur)	2024-2025
○ D. Chirico, University of Milano-Bicocca, Master's thesis, 100%	2023-2024
○ S. Corbo, Politecnico di Milano, Master's thesis, 100%	2023-2024
○ R. Rosso, University of Pisa, Master's thesis, 80% (now PhD student at Univ. of Pisa)	2023-2024
○ G. Astorino, University of Pisa, Master's thesis, 80% (now PhD student at Univ. of Pisa)	2023-2024
○ M. Piarulli, University of Milano-Bicocca, Master's thesis, 100% (now PhD student at Univ. of Toulouse)	2022-2023
○ A. Spadaro, University of Milano-Bicocca, Master's thesis, 100% (now PhD student at Univ. of Milano-Bicocca)	2021-2022
○ A. Carzaniga, University of Milano-Bicocca, Master's thesis, 100%	2021-2022
○ A. Geminardi, University of Milano-Bicocca, Master's thesis, 100% (now PhD student at Univ. of Pavia)	2021-2022
○ E. Finch, University of Birmingham, Year 4 project, 50%	2018
○ V. Spasova, University of Birmingham, Year 4 project, 50%	2018

BSc student supervision:

○ H. P. G. Carabajo, University of Milano-Bicocca, Bachelor's thesis, 100%	2023-2024
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Corsi tenuti

Anno Accad.

○ Inference models in LISA , PhD course, Univ. of Trento (Italy).	2026
○ Current and future challenges in GW astronomy , PhD course, Milano-Bicocca (Italy).	2023
<i>Contenuto:</i> Introduzione all'analisi dati di onde gravitazionali. Interferometri spaziali e terrestri. Popolazioni di sorgenti: binarie di oggetti compatti, fondi stocastici.	
○ Mathematical physics and gravity (MAF900), PhD course, Univ. of Stavanger (Norway).	2023
<i>Contenuto:</i> Introduzione all'analisi dati di onde gravitazionali. Space-based interferometers. Popolazioni di sorgenti: binarie di oggetti compatti, fondi stocastici. Modellazione del segnale: binarie di oggetti compatti galattiche ed extragalattiche fondi stocastici astrofisici e cosmologici. Rilevazione del segnale e stima dei parametri: approcci frequentisti e bayesiani.	

Tecniche avanzate di campionamento stocastico.

- **Lecture in Astrostatistics** (F5802Q014/20), Astrophysics MSc, Univ. of Milano-Bicocca (Italy) 2022
Contenuto: Popolazioni di sorgenti: binarie di oggetti compatti, fondi stocastici.
 Introduzione all'analisi dati di onde gravitazionali. Space-based interferometers.
 Rilevazione del segnale e stima dei parametri: approcci frequentisti e bayesiani.

Tutoraggio

Anno Accad.

- **Python Computing Lab**, Bachelor's degree in Physics, Univ. of Birmingham, UK 2017-2021
Contenuto: Programmazione Python, simulazione di sistemi fisici in meccanica celeste e meccanica classica, termodinamica, elettromagnetismo. Analisi dati.
- **Maths for physicists**, Bachelor's degree in Physics, Univ. of Birmingham, UK 2017-2019
Contenuto: Algebra lineare, calcolo differenziale e integrale, equazioni differenziali
 Teoria dei gruppi e delle rappresentazioni
- **Physics and communication skills**, Master's degree in Physics, Univ. of Birmingham, UK. 2019
Contenuto: \LaTeX basics. Drafting of lab reports, publications, seminars

Servizio accademico, responsabilità editoriali e di ricerca

Responsabilità nelle collaborazioni internazionali

- LISA Consortium AstroWG coordinator, project "Updatable predictions for stBBH in LISA" 2025-2026
- PAQA co-chair of the Coordination Unit L2D (Global Fit, ESA LISA Project Office) 2024-2026
- DDPC-Italy Lead of the LISA DDPC national coordination initiative 2024-2026

Journal referee

- Physical Review Letters
- The Astrophysical Journal Letters
- Journal of Cosmology and Astroparticle Physics
- Monthly Notices of the Royal Astronomical Society
- Institute of Physics Machine Learning: Science and Technology
- Physical Review D
- The Open Journal of Astrophysics
- NASA Technology Transfer Program
- IoP Classical and Quantum Gravity
- Institute of Physics Trusted Reviewer Excellence program

Responsabilità editoriali

- Editorial board Lensing working group in the LIGO, Virgo, KAGRA collaboration 2023
- Co-editor of a Living Review in relativity issue on "LISA data analysis" 2022-2023

Organizzatore di conferenze

- *LISA Without Frontiers* Workshop Sprint Session Coach, Sexten, IT. 2026
- *LISA Distributed Data Processing Center June Workshop*, Milan, IT. 2025
- **IFPU focus week** on "*Emerging methods in GW population inference*", Trieste, Italy. 2024
- *LISA Astrophysics Working Group Conference*, Birmingham, UK. 2022
- *Gravitational-wave populations: what's next?*, Milan, Italy. 2023
- *Gravitational-wave Excellence Alliance Training (GrEAT) PhD school*, Birmingham, UK. 2019
- *Gravitational-wave Open Science Center First Open Data Workshop*, (online) 2019

Divulgazione e pubblico coinvolgimento

- Orientation activities for high-school students as part of the *PNRR Orientation* project, Milan, Italy. 2024-2025
- Development of illustrations and animations for LISA Consortium 2023
- Development of illustrations and graphic content for LIGO Magazine 2022-2023
- Development of visualisation interface and skymaps content for GW alerts web and smartphone app. <https://chirp.sr.bham.ac.uk> 2022-2023
- Organization of biweekly public engagement events "*Astronomy in the city*", Birmingham, UK 2017-2021
- Organizer of the "PhD meet and greet" event series, University of Birmingham 2021
- Lectures to high-school students, Italy since 2021

Riconoscimenti professionali e servizio

- National Scientific Habilitation (ASN) as associated professor. 2023
 in Astrophysics, Cosmology and Space Science (GSD 02/PHYS-05 - PHYS-05/A)
- French Qualification for teaching in Higher Education in Astrophysics (Sec.34), 2023

French Ministry of higher education and research (qualification no.23234388826).

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| ○ LSC Academic Advisory Committee. | 2019-2021 |
| ○ Secretary for the Research Fellows Council, University of Milano-Bicocca | 2024-2025 |
| ○ Research Fellow Representative, Department of Physics, University of Milano-Bicocca | 2023-2025 |

Affiliazioni

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| ○ LISA Distributed Data Processing Center, full member. | since 2024 |
| ○ LISA Consortium, core member. | since 2018 |
| ○ Italian Center for Supercomputing (ICSC). | since 2021 |
| ○ TEONGRAV National Initiative (Gravity Theory)
Italian National Institute for Nuclear Physics (INFN). | since 2021 |
| ○ LIGO, Virgo, Kagra Collaboration, full member. | since 2017 |
| ○ Italian Society of General Relativity and Gravitational Physics (SIGRAV) | since 2021 |
| ○ Istituto Nazionale di Astrofisica (INAF) | since 2021 |
| ○ American Physical Society (APS), member. | |
| ○ Italian Physical Society (SIF), member | 2021 |
| ○ Royal Astronomical Society (RAS), fellow. | 2018-2021 |

Competenze

Linguaggi di programmazione: Python (advanced), Bash (advanced), Julia (advanced), R (advanced), Mathematica, Go, Stan, C, Qt5.

Altri strumenti scientifici: PyTorch, TensorFlow, LIGO lalsuite, \LaTeX , git, HPC tools, containerization, continuous integration, cloud computing, web development.

Lingue: English (fluent), Italian (native), French (basic)

Interessi

Nuoto, corsa, arrampicata, fotografia. Libri di fantascienza, musica elettronica.

Pubblicazioni

Articoli a lista d'autori corta e di collaborazione sottomessi a cui ho contribuito sostanzialmente:

Pubblicazioni di studenti supervisionati contrassegnate con *.

- 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 \[astro-ph.HE\]](#).

Articoli a lista d'autori corta pubblicati in riviste scientifiche peer-reviewed:

Pubblicazioni di studenti supervisionati contrassegnate con *.

- 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 Renzi, 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 \[astro-ph.GA\]](#).
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1. *Label Switching Problem in Bayesian Analysis for Gravitational Wave Astronomy.*
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13. *Search for gravitational-lensing signatures in the full third observing run of the LIGO-Virgo network.*
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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.*
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LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.
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10. *Tests of General Relativity with GWTC-3.*
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9. *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run.*
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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.
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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.*
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3. *Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo .*
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[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 \[gr-qc\]](#).

Altre pubblicazioni:

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](#).

Seminari e Conferenze

Conferenze su invito contrassegnate con *.

Conferenze e workshop:

30. *Is your stochastic signal really detectable?*.
XXVI SIGRAV conference on general relativity and gravitation, Univ. of Milano-Bicocca, Milan, Italy, 2025/09/09.
- 29.* *Emergence of Milky Way structure in the first year of LISA data.*
CERN UniGe Gravitational Wave meeting, Geneva, Switzerland, 2025/05/23.
28. *LISA stellar-mass black holes informed by the GWTC-3 population: event rates and parameters reconstruction.*
LISA Astrophysics Working Group Meeting 2024, Garching, Germany, 2024/11/05.
- 27.* *Astrophysics panel session.*
GRASP: Gravity Shape Pisa 2024, Pisa, Italy, 2024/10/24.
- 26.* *Beyond Gauss? A more accurate model for LISA astrophysical noise sources.*
Kavli Institute for Cosmology Seminars, Cambridge, United Kingdom, 2024/10/14.
- 25.* *Beyond Gauss? A more accurate model for LISA astrophysical noise sources.*
Heterogeneous Data and Large Representation Models in Science, Toulouse, France, 2024/10/01.
24. *LISA stellar-mass black holes informed by the GWTC-3 population: event rates and parameters reconstruction.*
15th International LISA Symposium, Dublin, Ireland, 2024/07/08.
- 23.* *LISA data analysis: from the stochastic background to the Milky Way.*
11th LISA Cosmology Working Group Workshop, Porto, Portugal, 2024/06/19.
- 22.* *An introduction to Bayesian Inference.*
International Pulsar Timing Array Student Week, Milan, Italy, 2024/06/17.
- 21.* *Statistical challenges in LISA data analysis.*
LAUTARO joint meeting, GSSI-University of Milano-Bicocca, Milano, Italy, 2024/04/17.
20. *From mHz to kHz: stochastic background implications on astrophysical sources and population reconstruction.*
LISA Astrophysics working group workshop, University of Milano-Bicocca, Milano, Italy, 2023/09/13.
19. *Non-gaussian gravitational wave backgrounds across the GW spectrum.*
XXV Sigrav conference on general relativity and gravitation, SISSA, Trieste, Italy, 2023/09/04.
- 18.* *LISA SGWB data analysis (session chair).*
Data Analysis Challenges for SGWB Workshop, CERN, Geneva, Switzerland, 2023/07/19.
- 17.* *Global Fit and foregrounds.*
LISA SGWB detection brainstorming, Univ. of Geneva, Geneva, Switzerland, 2023/07/17.
- 16.* *Beyond functional forms: non-parametric methods. (panelist talk).*
Gravitational-wave populations: What's next?, University of Milano-Bicocca, Milan, Italy, 2023/07/01.
15. *The last three years : multiband gravitational-wave observations of stellar-mass binary black holes.*
LISA Astrophysics working group workshop, University of Birmingham, Birmingham, UK, 2022/06/23.
14. *The last three years : multiband gravitational-wave observations of stellar-mass binary black holes.*
American Physical Society (APS) April meeting, New York (NY), USA, 2022/04/12.
13. *Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.*
XXIV Sigrav conference on general relativity and gravitation, Urbino, Italy, 2021/09/08.
12. *Chirp: a web and smartphone application for visualization of gravitational-wave alerts.*
14th Amaldi Conference on Gravitational Waves, (online), 2021/07/21.
- 11.* *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run.*
2nd EPS conference on gravitation, (online, on behalf of LVK), 2021/05/27.
- 10.* *Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.*
LISA Data Challenge meeting, (online), 2021/06/17.
- 9.* *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run.*
Webinar on behalf of the LVK collaboration, (online), 2021/05/27.
8. *Milky Way Satellites Shining Bright in Gravitational Waves.*
13th LISA Symposium, (online), 2020/09/13.
7. *Constraining the Lensing of Binary Black Holes from Their Stochastic Background.*
LISA Sprint workshop, CCA, Flatiron Institute, New York (NY), USA, 2020/03/04.
6. *Multiple source detection in GW astronomy: the label switching problem.*
30th Texas Symposium, University of Portsmouth, Portsmouth, UK, 2019/12/12.
5. *Non-gaussian Stochastic background search with importance sampling.*
LIGO, Virgo, KAGRA September meeting, Warsaw, Poland, 2019/09/01.

4. *An improved detector for non-Gaussian stochastic background.*
Stochastic Background Data Analysis for LISA meeting, Instituto de Fisica Teorica, Madrid, Spain, 2019/06/01.
3. *Hierarchical nonparametric density estimation for population inference.*
LIGO, Virgo, KAGRA March meeting, Winsconsin, USA, 2019/03/18.
2. *Fast Evaluation of Campbell processes N-point correlation functions.*
Astro Hack Week: Data Science for Next-Generation Astronomy, Lorentz Center, Leiden, The Netherlands, 2018/08/01.
1. *Stochastic Gravitational Wave Background Data Analysis for Radler.*
5th LISA Cosmology Working Group workshop, Physicum, University of Helsinki, Helsinki, Finland, 2018/06/01.

Seminari:

- 10.* *Fast LISA inference using Gaussian processes.*
University of Geneva, Geneva, Switzerland, 2025/05/21.
- 9.* *Emergence of Milky Way structure in the first year of LISA data.*
Department of Physics, University of Pisa, Pisa, Italy, 2025/05/16.
- 8.* *Statistical challenges in GW inference: an application of field theory to direct population reconstruction in LISA.*
APP seminar, SISSA, Trieste, Italy, 2024/05/06.
- 7.* *GRAF: Gravitational waves data and global fit.*
Department of Physics, University of Milano-Bicocca, Milan, Italy, 2023/12/14.
- 6.* *LISA global inference: statistical and modelling challenges for the Milky Way.*
Max Planck Institute for Astrophysics, Garching, Germany, 2023/11/29.
- 5.* *LISA Global inference: modelling, statistical, and computational challenges.*
Department of Physics, University of Pisa, Pisa, Italy, 2023/10/04.
- 4.* *Gravitational waves in the many sources, many detectors era.*
Institute for Mathematics and Physics, University of Stavanger, Stavanger, Norway, 2022/09/29.
- 3.* *Stellar mass binary black holes : what, when, and where.*
Astroparticule et cosmologie, Université Paris Cité, Paris, France, 2022/06/12, (online).
- 2.* *The last three years: multiband gravitational-wave observations of stellar-mass binary black holes.*
Physics Department, Columbia University, New York (NY), USA, 2022/04/07.
- 1.* *Set the alarm : Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.*
Sun Yat-sen University, Zhuhai, China, 2021/07/30, (online).

Divulgazione:

5. *Onde gravitazionali: ascoltare l'Universo anzich'è solo guardarlo.*
University of Milano-Bicocca, Milan, Italy, 2024.
4. *An orchestra of lasers and gravitational waves.*
Pint of Science 2024, Milan, Italy, 2024.
3. *Gravitational-waves in space and on Earth.*
Manchester Museum of Science and Industry, Manchester, UK, 2018.
2. *An orchestra of lasers and gravitational waves.*
Manchester Museum of Science and Industry, Manchester, UK, 2018.
1. *A Universe of waves.*
Science Caf'e, Italy, 2018.

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