

Riccardo Buscicchio | Curriculum Vitæ

riccardo.buscicchio@unimib.it • www.riccardobuscicchio.com • July 16, 2024

Relativistic astrophysicist, developing advanced data analysis and statistical frameworks for Bayesian and frequentist methods. Applications include space-mission modelling, signal detection and parameter estimation in gravitational-wave astronomy, population inference, stochastic background searches.

Contacts

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Website & publications record: www.riccardobuscicchio.com – [arXiv](#) – [ORCID](#)

Academic positions

Università degli Studi di Milano-Bicocca

Milan, Italy

Postdoctoral scholar (Assegnista di ricerca), Department of Physics “G.Occhialini”

2021 - current

- *Main activity:* development of LISA data analysis ground-segment for the Italian Space Agency.

Education

University of Birmingham

Birmingham, UK

Ph.D., School of Physics & Astronomy

2017-2021

- *Supervisor:* A. Vecchio. Thesis resulted in 6 short-author publications.
- *Thesis Title:* Topics in Bayesian population inference for Gravitational Wave Astronomy

This thesis explores a number of topics related to Bayesian inference in gravitational-wave astronomy. From hierarchical inference on population of stellar mass binary black hole mergers, to the development of an end-to-end parameter estimation routine for space-based interferometers. Other topics are investigated: population of binary white dwarfs in satellite galaxies of the Milky Way; constraints from stochastic background on lensing of gravitational waves from binary neutron star and binary black hole mergers; statistical techniques for simultaneous inference on multiple undistinguishable sources.

Università degli Studi di Pisa

Pisa, Italy

Master's degree in Theoretical physics

2013-2016

- *Final degree grade:* 110/110
- *Supervisor:* G. Cella. Thesis resulted in one short-author publications.
- *Thesis title:* An improved detector for non-gaussian stochastic background of gravitational waves.

This thesis explored the idea of using functional formalism from stochastic processes and classical field theory to develop a new detection algorithm, with improved performance, for non-gaussian stochastic backgrounds of gravitational waves

Columbia University

New York NY, USA

INFN-NSF Summer Internship

Jun-Sept 2013

- *Supervisor:* S. Marka, I. Bartos.

We estimated the contribution to noise level in second and third generation ground-based detectors due to primary and secondary cosmic ray showers impinging on the interferometer mirrors.

Università degli Studi di Pisa

Pisa, Italy

Bachelor's degree in Physics

2008-2012

- *Final degree grade:* 109/110.
- *Thesis title:* Template banks for gravitational wave detection: an application of Information Geometry.

This thesis explored the idea of using differential geometry formalism (as defined in the context of Information theory) to develop a template placing algorithm over source parameter space with non-trivial manifold structure.

Metrics

Publications:

- 20 short-author papers published in major peer-reviewed journals (out of which 5 first-authored papers).
- 12 collaboration papers, with substantial contribution, published in major peer-reviewed journals
- 5 papers in submission stage,
- 2 other publications (thesis, white papers, long-authorlist reviews)

Total number of citations: >11100. h-index: 22 (using ADS and INSPIRE).

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

Full list of publications available below and at www.riccardobuscicchio.com/publications.

Full list of presentations available below and at www.riccardobuscicchio.com/talks.

Grants, Prizes, & Awards

Career prizes:

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

Other funding:

- EuroHPC PRACE “LISAS-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
- Travel Grant, Horizon 2020 AHEAD 2020 (High Energy Astrophysics) 2021
- Travel Grant, American Physical Society, DGRAV Student Travel Grant 2020
- Travel Grant, Institute of Physics Student Travel fund 2019
- Travel Grant, Royal Astronomical Society, UK. 2018

Supervision, Mentoring, Teaching

Ph.D. student co-supervisor:

- A. Spadaro, University of Milano-Bicocca. 2022-2025
- F. Pozzoli, University of Insubria. 2022-2025

MSc student mentoring:

- D. Chirico, University of Milano-Bicocca, Master’s thesis. 2023-2024
- S. Corbo, Politecnico di Milano, Master’s thesis. 2023-2024
- R. Rosso, University of Pisa, Master’s thesis (co-mentor). 2023-2024
- G. Astorino, University of Pisa, Master’s thesis (co-mentor). 2023-2024
- M. Piarulli, University of Milano-Bicocca, Master’s thesis. 2022-2023
(now PhD student at Univ. of Toulouse)
- A. Spadaro, University of Milano-Bicocca, Master’s thesis. 2021-2022
(now PhD student at Univ. of Milano-Bicocca)
- A. Carzaniga, University of Milano-Bicocca, Master’s thesis. 2021-2022
- A. Geminardi, University of Milano-Bicocca, Master’s thesis. 2021-2022
(now PhD student at Univ. of Pavia)
- E. Finch, University of Birmingham, Year 4 project. 2018
- V. Spasova, University of Birmingham, Year 4 project. 2018

BSc student mentoring:

- H. P. G. Carabajo, University of Milano-Bicocca, Bachelor’s thesis. 2023-2024

Taught classes:

- Current and future challenges in GW astronomy, PhD course, Milano-Bicocca (IT). 2023
- Mathematical physics and gravity (MAF900), Module 3, PhD course, Univ. of Stavanger (NO). 2023

- Contributed lecture to Astrostatistics (F5802Q014/20), Astrophysics MSc, Milano-Bicocca. 2022

Tutoring:

- Year 2 Python Computing Lab, Physics BSc, Birmingham. 2017-2021
- Year 2 Maths for physicists, Physics BSc, Birmingham. 2017-2019
- Year 4 Physics and communication skills, Physics BSc, Birmingham. 2019

Academic service, editorial and research responsibilities

International collaboration responsibilities

- PA&QA lead of the Coordination Unit L2D (ESA LISA Project Office) 2024-current

Journal referee

- Physical Review Letters
- The Astrophysical Journal Letters
- Journal of Cosmology and Astroparticle Physics
- Monthly Notices of the Royal Astronomical Society
- Physics Letters D
- The Open Journal of Astrophysics
- NASA Technology Transfer Program

Editorial responsibilities

- MDPI Universe 2024
Special Issue “Challenges and Synergies with Future Gravitational Wave Observatories”.
- Editorial board Lensing subgroup in the LIGO, Virgo, KAGRA collaboration 2023
- Co-editor of a Living Review in relativity issue on “LISA data analysis” 2022-2023

Conference organizer (or committee member)

- IFPU focus week on “Emerging methods in GW population inference”, Trieste, IT. 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, Remote 2019

Outreach & public engagement

- 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 2022-2023
web and smartphone app. <https://chirp.sr.bham.ac.uk>
- Organization of biweekly public engagement events “Astronomy in the city”, Birmingham, UK 2017-2021
- Lectures to high-school students, Italy since 2021

Professional recognition and service

- Italian Habilitation to Associate Professorship in Astrophysics (ASN 02/C1). 2023
- Research Fellow Representative, Department of Physics, University of Milano-Bicocca 2023-2025
- French Qualification for teaching in Higher Education in Astrophysics (Sec.34). 2023
French Ministry of higher education and research (qualification no.23234388826).
- Meetings organizer “PhD meet and greet”, University of Birmingham 2021
- LSC Academic Advisory Committee. 2019-2021

Memberships

- Italian Center for Supercomputing (ICSC). since 2021
- TEONGRAV National Initiative (Gravity Theory) since 2021
Italian National Institute for Nuclear Physics (INFN).
- LIGO, Virgo, Kagra Collaboration, full member. since 2017
- LISA Consortium, full member. since 2018
- 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

Skills

Programming languages: Python (advanced), Bash (advanced), Go, R, Stan, Julia, Mathematica, C, Qt5.

Other scientific tools: TensorFlow, LIGO lalsuite, \LaTeX , git, HPC tools, containerization, continuous integration, cloud computing, website development.

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

Hobbies

Swimming, running, rock climbing, photography. Sci-fi books, electronic music.

Full publication list

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

5. *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.
[arXiv:2407.03935 \[astro-ph.HE\]](#).
4. *Partial alignment between jets and megamasers: coherent or selective accretion?.*
M. Dotti, **R. Buscicchio**, F. Bollati, R. Decarli, W. Del Pozzo, A. Franchini.
[arXiv:2403.18002 \[astro-ph.GA\]](#).
3. *LISA Definition Study Report.*
M. Colpi, K. Danzmann, M. Hewitson, K. Holley-Bockelmann, et al. (incl. **R. Buscicchio**).
[arXiv:2402.07571 \[astro-ph.CO\]](#).
2. *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 \[astro-ph.HE\]](#).
1. *Search for gravitational-lensing signatures in the full third observing run of the LIGO-Virgo network.*
LIGO Scientific Collaboration, Virgo Collaboration, KAGRA collaboration.
[arXiv:2304.08393 \[gr-qc\]](#).

Papers in major peer-reviewed journals:

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 Phys. Rev. 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 Phys. Rev. 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 \[astro-ph.GA\]](#).
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.:

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 Phys. Rev. D 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 \(accepted\)](#). [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. These include PhD thesis, and other collaboration papers.:

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](#).

Full presentation list

Invited talks marked with *.

Talks at conferences:

21. *LISA stellar-mass black holes informed by the GWTC-3 population: event rates and parameters reconstruction.*
15th International LISA Symposium, Dublin, Ireland, Jul 2024.
- 20.* *LISA data analysis: from the stochastic background to the Milky Way.*
11th LISA Cosmology Working Group Workshop, Porto, Portugal, Jun 2024.
- 19.* *An introduction to Bayesian Inference.*
International Pulsar Timing Array Student Week, Milan, Italy, Jun 2024.
- 18.* *Statistical challenges in LISA data analysis.*
LAUTARO joint meeting, GSSI-University of Milano-Bicocca, Milano, Italy, Apr 2024.
17. *From mHz to kHz: stochastic background implications on astrophysical sources and population reconstruction.*
LISA Astrophysics working group workshop, University of Milano-Bicocca, Milano, Italy, Sept 2023.
16. *Non-gaussian gravitational wave backgrounds across the GW spectrum.*
XXV Sigrav conference on general relativity and gravitation, SISSA, Trieste, Italy, Sept 2023.
- 15.* *LISA SGWB data analysis (session chair).*
Data Analysis Challenges for SGWB Workshop, CERN, Geneva, Switzerland, Jul 2023.
- 14.* *Global Fit and foregrounds.*
LISA SGWB detection brainstorming, Univ. of Geneva, Geneva, Switzerland, Jul 2023.
- 13.* *Beyond functional forms: non-parametric methods. (panelist talk).*
Gravitational-wave populations: What's next?, Milano-Bicocca, IT, Jul 2023.
12. *The last three years : multiband gravitational-wave observations of stellar-mass binary black holes.*
LISA Astrophysics working group workshop, University of Birmingham, Birmingham, UK, Jun 2022.
11. *The last three years : multiband gravitational-wave observations of stellar-mass binary black holes.*
American Physical Society (APS) April meeting, New York (NY), USA, Apr 2022.

10. *Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.*
XXIV Sigrav conference on general relativity and gravitation, Urbino, Italy, Sept 2021.
9. *Chirp: a web and smartphone application for visualization of gravitational-wave alerts.*
(remote) 14th Amaldi Conference on Gravitational Waves, Jul 2021.
8. *Milky Way Satellites Shining Bright in Gravitational Waves.*
(remote) 13th LISA Symposium, Sept 2020.
7. *Constraining the Lensing of Binary Black Holes from Their Stochastic Background.*
LISA Sprint workshop, Center for Computational Astrophysics, Flatiron Institute, New York (NY), USA, Mar 2020.
6. *Multiple source detection in GW astronomy: the label switching problem.*
30th Texas Symposium, University of Portsmouth, Portsmouth, UK, Dec 2019.
5. *Non-gaussian Stochastic background search with importance sampling.*
LIGO, Virgo, KAGRA March meeting, Lake Geneva Wisconsin, Milwaukee, USA, Mar 2019.
4. *Hierarchical nonparametric density estimation for population inference.*
LIGO, Virgo, KAGRA September meeting, Warsaw, Poland, Sept 2019.
3. *An improved detector for non-Gaussian stochastic background.*
Stochastic Background Data Analysis for LISA meeting, Instituto de Fisica Teorica, Madrid, Spain, Jan 2019.
2. *Fast Evaluation of Campbell processes N-point correlation functions.*
Astro Hack Week: Data Science for Next-Generation Astronomy, Lorentz Center, Leiden, The Netherlands, Aug 2018.
1. *Stochastic Gravitational Wave Background Data Analysis for Radler.*
5th LISA Cosmology Working Group workshop, Physicum, University of Helsinki, Helsinki, Finland, Jun 2018.

Talks at department seminars:

- 10.* *Statistical challenges in GW inference: an application of field theory to direct population reconstruction in LISA.*
APP seminar, SISSA, Trieste, Italy, May 2024.
- 9.* *GRAF: Gravitational waves data and global fit.*
Department of Physics, University of Milano-Bicocca, Milan, Italy, Dec 2023.
- 8.* *LISA global inference: statistical and modelling challenges for the Milky Way.*
Max Planck Institute for Astrophysics, Munchen, Germany, Nov 2023.
- 7.* *LISA Global inference: modelling, statistical, and computational challenges.*
Department of Physics, University of Pisa, Pisa, Italy, Oct 2023.
- 6.* *Gravitational waves in the many sources, many detectors era.*
Institute for Mathematics and Physics, University of Stavanger, Stavanger, Norway, Apr 2023.
- 5.* *The last three years: multiband gravitational-wave observations of stellar-mass binary black holes.*
Physics Department, Columbia University, New York (NY), USA, 2022.
- 4.* *Stellar mass binary black holes : what, when, and where.*
Astroparticule et cosmologie, Université Paris Cité, Paris, France, (remote) 2022.
3. *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run.*
(remote, on behalf of the LVK collaboration) 2nd European Physical Society Conference on Gravitation, Jul 2021.
- 2.* *Set the alarm : Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.*
(remote) Sun Yat-sen University, Zhuhai, China, 2021.
1. *Bayesian parameter estimation of stellar-mass black-hole binaries with LISA.*
(remote) LISA Data Analysis Conference, 2021.