LUCA VISINELLI

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Previous research experience

2020 – 2021 **Marie Curie "Fellini" fellow**, INFN Frascati National Laboratories (Italy)

2019 – 2020 **GRAPPA fellow**, GRAPPA, University of Amsterdam (Netherlands)
Principal investigator: Prof. Christopher Weniger (GRAPPA, Amsterdam)

2016 – 2019 **Postdoctoral researcher**, NORDITA, Stockholm (Sweden)
Principal investigator: Prof. Katherine Freese (UT Austin & Stockholm U.)

2013 – 2015 **Postdoctoral fellow**, Mediterranean Center on Climate Changes (CMCC), Bologna (Italy)
Principal investigators: Prof. Simona Masina (CMCC)

2007 – 2011 **Research assistant**, The University of Utah (USA)

Education

December 16, 2011 **Ph.D. in Physics**, *The University of Utah*, Salt Lake City, USA.
Advisor: Prof. Paolo Gondolo. Thesis: *Axions in CDM and inflation models*

August 5, 2011 **M.Sc. in Physics**, *The University of Utah*, Salt Lake City, USA.
Advisor: Prof. Paolo Gondolo. GPA: 3.982/4.000

June 22, 2007 **M.Sc. in Physics**, *University of Bologna*, Italy.
Advisor: Prof. Fiorenzo Bastianelli. Grade: 110/110 *cum Laude*

October 14, 2005 **B.Sc. in Physics**, *University of Bologna*, Italy.
Advisor: Prof. Giovanni Carlo Bonsignori. Grade: 110/110 *cum Laude*

July 4, 2002 **High School Diploma**, *High School "E. Fermi"*, Bologna, Italy. Grade: 100/100.

Certifications

2020-2029 **National Scientific Qualification** for the role of Associate Professor in Italy.
Sector of competence: "02/A2 - Theoretical Physics of Fundamental Interactions"

Publications

Full list of publications provided below, see also my INSPIRE, ADS, and Google Scholar; **h-index=34**; 70 papers (57 published/accepted on top-tier JCR journals); 4600+ total citations, 12 (21) papers with 100+ (50+) citations; 79.8 average citations per refereed paper (INSPIRE statistics as of January 18, 2023)

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ArXiv My article list on https://arxiv.org
Sciprofiles https://sciprofiles.com/profile/lucavisinelli
GIT Repository https://github.com/lucavisinelli

Participation in Research and Development Contracts

2020-2021 Horizon 2020 research and innovation programme, issued by the European Union under the Marie Skłodowska-Curie grant agreement No. 754496 (H2020-MSCA-COFUND-2016 FELLINI) "Tools for Axions, Leptogenesis, and Neutrino Theories".
Principal Investigator: **Luca Visinelli**. 2020-2023. 50.520,00 EUR/year.

2019-2020 Dutch Research Council, contract No. 680.92.18.03 "The Hidden Universe of Weakly Interacting Particles", Principal Investigator: Prof. Paul De Jong (University of Amsterdam), 2018-2023. I took part as GRAPPA Fellow at University of Amsterdam.

2016-2019 Swedish Research Council, contract No. 638-2013-8993, Principal Investigator Prof. Katherine Freese (U. of Texas Austin and Stockholm University), 2014-2024. Approximately 10.000.000,00 EUR. I took part at Stockholm University and Uppsala University.

2015 EU FP7-SPACE "MyOcean followup", Principal Investigator Prof. Simona Masina (Research division director, Euro-Mediterranean Centre on Climate Changes), 2014-2015. 99.244,19 EUR. I participated as a post-doctoral researcher at CMCC.

2013-2014 EU FP7-SPACE "MyOcean2", Principal Investigator Prof. Simona Masina (Research division director, Euro-Mediterranean Centre on Climate Changes), 2012-2014. 464.980,00 EUR. I participated as a post-doctoral researcher at CMCC.

2013-2014 EU FP7-ENV "GEOCARBON", Principal Investigator Prof. Simona Masina (Research division director, Euro-Mediterranean Centre on Climate Changes), 2012-2014. 95.000,00 EUR. I participated as a post-doctoral researcher at CMCC.

Individual Grants, Fellowships, and Prizes Awarded

January 2022 2021 Buchalter Cosmology Prize (Third Prize) for the paper "Direct detection of dark energy: the XENON1T excess and future prospects" [hep-ph/2103.15834].
Co-recipients: S. Vagnozzi, P. Brax, A.C. Davis, J. Sakstein.
Also announced by the American Astronomical Society.

December 2021 **High-level overseas talent**, Shanghai municipality.

November 2020 **Tenure-track position** offered as Associate Professor, Shanghai Jiao Tong University, with joint Fellowship at the Tsung-Dao Lee Institute. Startup fund: approx. 210 k USD.

November 2020 Fellini Fellowship under Marie Sklodowska-Curie COFUND Action, 2020-2023.
Project: "Tools for Axions, Leptogenesis and Neutrino Theories (TALeNT)".
Approximately 52.000 EUR/year, to be spent at INFN Frascati.

2007-2008 Award for PhD students abroad (26.318,70 EUR), University of Bologna

Fall 2006 Undergraduate Student Award (approx. 2.000 EUR), University of Bologna

Group Grants and Fellowships Awarded

November 2022 Green Bank Telescope Proposal: "Continuing the Search for Axion Dark Matter in Andromeda with VEGAS", Accepted (GBT/23A-245). Data to be taken in 2023.

Spring 2022 COST Action Proposal OC-2019-1-23688 "COSMIC WISPers in the Dark Universe: Theory, astrophysics and experiments", Approved. Principal investigator: Prof. Alessandro Mirizzi.

August 2021 Green Bank Telescope Proposal: "Searching for Axion Dark Matter in Andromeda Using an X-band Receiver", Accepted (GBT/22A-067). Data have been taken during 2022.

Other Awards

Fall 2019 Tax Relief Award "Rientro dei Cervelli" (Brain Gain) issued by the Italian Government

Fall 2019 Tax Relief Award for highly skilled immigrants in the Netherlands

Fall 2016 Tax Relief Award for foreign key personnel in Sweden

Spring 2011 Outstanding Teaching Assistantship Award, The University of Utah.

2001-2002 Honorable Mention at the Italian Physics Olympiads.

Service in Editorial Boards

2022-2023 Guest editor for the Special Issue of the journal Symmetry:
"Asymmetric and Symmetric Dark Matter", to be published in 2023.
Link: https://www.mdpi.com/journal/symmetry/special_issues.

2020-2022 Guest editor for the Special Issue of the journal Universe: *"Dark Matter and Dark Energy: Particle Physics, Cosmology, & Experimental Searches"*, to appear in 2023.
Link: www.mdpi-com/journal/universe/special_issues/DM_DE.

Teaching Experience

2017 Lecturer for FK5024 "Nuclear physics", Stockholm University, Stockholm (Sweden)

2015-2016 Lecturer for "Introductory Mathematics", Department of Political Sciences, University of Bologna (Italy)

2015 Teaching assistant in Mathematics for International Markets, Department of Economics, University of Bologna. Supervisor: Prof. Sabrina Mulinacci

2015 Teaching assistant for "Mathematics for Economics and Finance", Department of Economics, University of Bologna. Supervisor: Prof. Alessandra Giovagnoli

2010-2011 Teaching assistant for Physics 3740, "Special relativity and quantum mechanics", The University of Utah. Supervisors: Prof. Kyle Dawson and Prof. Jordan Gerton

2009 Teaching assistant for Physics 5020, "Electromagnetism", The University of Utah. Supervisor: Prof. Mikhail Raikh

2008 Teaching assistant for Physics 5010, "Classical and Quantum Mechanics", The University of Utah. Supervisor: Prof. Mikhail Raikh

Supervision and Mentoring

2022–today I am **supervising** M.Sc. student Kratika Mazde (Indian Institute of Science Education and Research); kratikamazde18@iisertvm.ac.in. Topics: Cosmology and astroparticles.

2021–today I am mentoring M.Sc. student Rittick Roy (Fudan University); rittickrr@gmail.com. Topics: Black hole superradiance.

2019–2022 I have mentored Ph.D. student Youjia Wu (University of Michigan); youjiawu@umich.edu. Advisor: Katherine Freese. Topics: Dark matter physics and stellar formation.

2019–2020 I **supervised** M.Sc. student Nicklas Ramberg (Uppsala University, now at Mainz University); nramberg@uni-mainz.de. [LINK TO THE MASTER THESIS]

2017 I have mentored Ph.D. student Janina Renk (Stockholm University).
Advisors: Katherine Freese, Joakim Edsjö. Topics: stellar evolution with MESA.

Research in Physics

Topics Theoretical physics, astroparticle physics, and cosmology.
Sample talk: my presentation in Georgetown University (Washington D.C.) for the Vera Rubin Symposium, link: https://www.youtube.com/watch?v=iazE3tBg2cw

Interests Phenomenology of the physics beyond the Standard Model of particle physics

Academic Service

2017-2018 Nordita Postdoc Representative (Administrative position), Stockholm (Sweden).

2017-2018 Organising the bi-weekly "Beyond the Standard Model" Workgroup at Oskar Klein Centre, Stockholm (Sweden).

2016-Today Regular refereeing for Physical Review Letters (PRL), Physical Review D (PRD), Physics Letters B (PLB), Journal of Cosmology & Astroparticle Physics (JCAP), Modern Physics Letters A (MPLA), Universe.

Programming skills

Systems Linux, UNIX, Mac OS, Microsoft.

Programming Python, Fortran, C/C++, Visual Basic, Pascal, parallel computing with MPI.

Calculus Mathematica, Matlab, R.

Databases Maintenance of numerical codes using the GIT repository

Datasets Manipulating large datasets in different format: NetCDF, ASCII, NCO, CDO.

Supercomputer High performance computing (IBM iDataplex cluster "Athena", 7712 cores).

Text editor Microsoft Office, LaTeX, Vi.

Software used GALPROP, DarkSUSY, Gadget2, MESA, NEMO, BFM.

Languages

English Writing, Speaking, Listening. 2007- TOEFL English Certification.
2002 - University of Cambridge FCE, Bologna.

Italian Mother tongue

Press coverage and media appearance

October 2021 "Signal From The XENON1T Experiment May Be A Hallmark Of Dark Energy", **Forbes**

September 2021 "Have we detected dark energy?", **www.cam.ac.uk**

June 2021 "Can we see dark energy from Earth? New experiments offer hope", **Space.com**

January 2021 "Black holes could reach 'stupendously large' sizes", **Queen Mary University of London**

November 2020 "Top ArXiv papers from week 48 2020, entry #2", **Sunny Vagnozzi's blog**

November 2020 "Top ArXiv papers from week 46 2020, entry #2", **Sunny Vagnozzi's blog**

September 2020 "'Stupendously large' black holes could grow to truly monstrous sizes", **Space.com**

September 2020 "Black holes - Do they grow stupendously large?", **Astrobites.org**

April 2020 "Interview with Luca Visinelli on "Il Messaggero" (In Italian)", **ilmessaggero.it**

September 2018 "Hunting for extra dimensions with gravitational waves", **Oskar Klein Centre blog**

August 2018 "Zoos, Swamplands and Cosmology", **Astrobites.org**

September 2017 "Interview with Luca Visinelli", **Oskar Klein Centre blog**

Articles published in peer-reviewed international journals

A complete list of my publications can be found at: http://inspirehep.net/author/profile/L.Visinelli.1

57. K. Mazde and **L. Visinelli**, *The interplay between the dark matter axion and primordial black holes*, JCAP **2301**, 021 [astro-ph/2209.14307] (2022).

56. G. Lambiase, L. Mastrototaro, and **L. Visinelli**, *Chern-Simons axion gravity and neutrino oscillations*, JCAP **2301**, 011 [hep-ph/2207.08067] (2023).

55. L. Caloni, M. Gerbino, M. Lattanzi, and **L. Visinelli**, *Novel cosmological bounds on thermally-produced axion-like particles*, JCAP **2209**, 021 [astro-ph/2205.01637] (2022).

54. W. Lin, **L. Visinelli**, D. Xu, and T. T. Yanagida, *Neutrino astronomy as a probe of physics beyond the Standard Model*, Phys. Rev. D **106**, 075011 [hep-ph/2202.04496] (2022).

53. Y. Wu, S. Baum, K. Freese, **L. Visinelli**, and H.-B. Yu, *Dark stars powered by self-interacting dark matter*, Phys. Rev. D **106**, 043028 [hep-ph/2205.10904] (2022).

52. Y. Chen, R. Roy, S. Vagnozzi, and **L. Visinelli**, *Superradiant evolution of the shadow and photon ring of Sagittarius $A^\star$*, Phys. Rev. D **106**, 043021 [astro-ph/2205.06238] (2022).

51. S. Vagnozzi and **L. Visinelli**, *Note on fundamental physics tests from black hole imaging*, Res. Notes AAS **6**, 106 [astro-ph/2205.11314] (2022).

50. **L. Visinelli** and H. Terças, *B-field induced mixing between Langmuir waves and axions*, Phys. Rev. D **105**, 096024 [hep-ph/1807.06828] (2022).

49. E. di Valentino *et al, A Review of the Particle Physics, Astrophysics, and Cosmology Associated with the Cosmological Tensions and Anomalies*, J. High En. Astrophys. **2204**, 002 [astro-ph/2203.06142] (2022).

48. R. Roy, S. Vagnozzi, and **L. Visinelli**, *Superradiance evolution of black hole shadows revisited*, Phys. Rev. D **105**, 083002 [astro-ph/2112.06932] (2022).

47. B. Barman, N. Bernal, N. Ramberg, and **L. Visinelli**, *QCD Axion Kinetic Misalignment without Prejudice*, Universe 8(12), 634 [hep-ph/2111.03677] (2022).

46. **L. Visinelli**, *Boson Stars and Oscillatons: A Review*, Int. J. Mod. Phys. D **30** 15, 2130006 [gr-qc/2109.05481] (2021).

45. G. Choi, W. Lin, **L. Visinelli**, and T. T. Yanagida, *Cosmic Birefringence and Electroweak Axion Dark Energy*, Phys. Rev. D **104**, L101302 [hep-ph/2106.12602] (2021).

44. A. Litsa, K. Freese, E. Sfakianakis, P. Stengel, and **L. Visinelli**, *Large Density Perturbations from Reheating to Standard Model particles due to the Dynamics of the Higgs Boson during Inflation*, Phys. Rev. D **104** 12, 123546 [hep-ph/2009.14218] (2021).

43. T. Edwards, B. Kavanagh, **L. Visinelli**, and C. Weniger, *Transient Radio Signatures from Neutron Star Encounters with QCD Axion Miniclusters*, Phys. Rev. Lett. **127**, 131103 [hep-ph/2011.05378] (2021).

42. B. Kavanagh, T. Edwards, **L. Visinelli**, and C. Weniger, *Stellar Disruption of Axion Miniclusters in the Milky Way*, Phys. Rev. D **104**, 063038 [astro-ph/2011.05377] (2021).

41. S. Vagnozzi, **L. Visinelli**, P. Brax, A. C. Davis, and J. Sakstein, *Direct detection of dark energy: the XENON1T excess and future prospects*, Phys. Rev. D **104**, 063023 [hep-ph/2103.15834] (2021).

40. B. Carr, F. Kühnel, and **L. Visinelli**, *Black Holes and WIMPs: All or Nothing or Something Else*, Mon. Not. Roy. Astron. Soc. **506** 3, 3648 (2021) [astro-ph/2011.01930] (2021).

39. E. di Valentino, O. Mena, S. Pan, **L. Visinelli**, W. Yang, A. Melchiorri, D. F. Mota, A. G. Riess, and J. Silk, *In the Realm of the Hubble tension - a Review of Solutions*, Class. Quant. Grav. **38**, 153001 [astro-ph/2103.01183] (2021).

38. N. Ramberg and **L. Visinelli**, *QCD axion and gravitational waves in light of NANOGrav results*, Phys. Rev. D **103**, 063031 [astro-ph/2012.06882] (2021).

37. T. Rindler-Daller, K. Freese, R. Townsend, and **L. Visinelli**, *Stability and Pulsation of the First Dark Stars*, Mon. Not. Roy. Astron. Soc. **503** 3, 3677 [astro-ph/2011.00231] (2021).

36. B. Carr, F. Kühnel, and **L. Visinelli**, *Constraints on Stupendously Large Black Holes*, Mon. Not. Roy. Astron. Soc. **501** 2, 2029 [astro-ph/2008.08077] (2021).

35. E. di Valentino *et al, Cosmology Intertwined IV: The Age of the Universe and its Curvature*, Astropart. Phys. **131**, 102607 [astro-ph/2008.11286] (2021).

34. E. di Valentino *et al, Cosmology Intertwined III: $f\sigma_8$ and S_8*, Astropart. Phys. **131**, 102604 [astro-ph/2008.11285] (2021).

33. E. di Valentino *et al, Cosmology Intertwined II: The Hubble Constant Tension*, Astropart. Phys. **131**, 102605 [astro-ph/2008.11284] (2021).

32. E. di Valentino *et al, Cosmology Intertwined I: Perspectives for the Next Decade*, Astropart. Phys. **131**, 102606 [astro-ph/2008.11283] (2021).

31. L. Di Luzio, M. Giannotti, E. Nardi, and **L. Visinelli**, *The landscape of QCD axion models*, Physics Reports **1**, 870 [hep-ph/2003.01100] (2020). [Corrigendum: Physics Reports **6**, 006 (2022).]

30. S. Vagnozzi, C. Bambi, and **L. Visinelli**, *Concerns regarding the use of black hole shadows as standard rulers*, Class. Quant. Grav. **37**, 8 [gr-qc/2001.02986] (2020).

29. S. Vagnozzi, **L. Visinelli**, O. Mena, and D. Mota, *Do we have any hope of detecting scattering between dark energy and baryons through cosmology?*, Mon. Not. R. Astron. Soc. **493** 1, 1139 [gr-qc/1911.12374] (2020).

28. **L. Visinelli** and J. Redondo, *Axion Miniclusters in Modified Cosmological Histories*, Phys. Rev. D **101**, 023008 [hep-ph/1808.01879] (2020).

27. **L. Visinelli**, S. Vagnozzi, and U. Danielsson, *Revisiting a negative cosmological constant from low-redshift data*, Symmetry *11*(8), 1035, Special Issue [astro-ph/1907.07953] (2019).

26. T. Tenkanen and **L. Visinelli**, *Axion dark matter from Higgs inflation with an intermediate H_**, JCAP **1908**, 033 [astro-ph/1906.11837] (2019).

25. E. Di Valentino, R. Ferreira, **L. Visinelli**, and U. Danielsson, *Late time transitions in the quintessence field and the H_0 tension*, Phys. Dark Univ. **26**, 100385 [astro-ph/1906.11255] (2019).

24. C. Bambi, K. Freese, S. Vagnozzi, and **L. Visinelli**, *Testing the rotational nature of the supermassive object M87* from the circularity and size of its first image*, Phys. Rev. D **100**, 044057 [gr-qc/1904.12983] (2019).

23. S. Vagnozzi and **L. Visinelli**, *Hunting for extra dimensions in the shadow of M87**, Phys. Rev. D **100**, 024020 [gr-qc/1905.12421] (2019).

22. N. Ramberg and **L. Visinelli**, *Probing the Early Universe with Axion Physics and Gravitational Waves*, Phys. Rev. D **99**, 123513 [astro-ph/1904.05707] (2019).

21. W. H. Kinney, S. Vagnozzi, and **L. Visinelli**, *The Zoo Plot Meets the Swampland: Mutual (In)Consistency of Single-Field Inflation, String Conjectures, and Cosmological Data*, Class. Quant. Grav. **36**, 11 [astro-ph/1808.06424] (2019).

20. **L. Visinelli** and S. Vagnozzi, *Cosmological window onto the string axiverse and the supersymmetry breaking scale*, Phys. Rev. D **99**, 063517 [hep-ph/1809.06382] (2019).

19. S. Boucenna, F. Kühnel, T. Ohlsson, and **L. Visinelli**, *Novel Constraints on Mixed Dark-Matter Scenarios of Primordial Black Holes and WIMPs*, JCAP **1807**, 003 [hep-ph/1712.06383] (2018).

18. K. Freese, E. Sfakianakis, P. Stengel, and **L. Visinelli**, *The Standard Model Higgs Boson can delay Reheating in Inflation*, JCAP **1805**, 067 [hep-ph/1712.03791] (2018).

17. **L. Visinelli**, N. Bolis, and S. Vagnozzi, *Brane-world extra dimensions in light of GW170817*, Phys. Rev. D **97**, 064039 [gr-qc/1711.06628] (2018).

16. **L. Visinelli**, S. Baum, J. Redondo, K. Freese, F. Wilczek, *Dilute and dense axion stars*, Phys. Lett. B **777**, 64 [astro-ph/1710.08910] (2018).

15. **L. Visinelli**, *(Non-)thermal production of WIMPs during kination*, Symmetry **10**, 546 [astro-ph/1710.11006] (2018).

14. **L. Visinelli**, *Light axion-like dark matter must be present during inflation*, Phys. Rev. D **96**, 023013 [astro-ph/1703.08798] (2017).

13. S. Baum, **L. Visinelli**, K. Freese, and P. Stengel, *Dark matter capture, sub-dominant WIMPs, and neutrino observatories*, Phys. Rev. D **95**, 043007 [astro-ph/1611.09665] (2017).

12. **L. Visinelli**, *Observational Constraints on Monomial Warm Inflation*, JCAP **1607**, 054 [astro-ph/1605.06449] (2016).

11. **L. Visinelli**, *Condensation of Galactic Cold Dark Matter*, JCAP **1607**, 009 [hep-ph/1509.05871] (2016).

10. **L. Visinelli**, S. Masina, M. Vichi, A. Storto, and T. Lovato, *Impacts of Data Assimilation on the Global Ocean Carbonate System*, Journal of Marine Systems **158**, 106 (2016).

9. **L. Visinelli** and P. Gondolo, *Kinetic decoupling of WIMPs: analytic expressions*, Phys. Rev. D **91** 8, 083526 [astro-ph/1501.02233] (2015).

8. **L. Visinelli**, *Neutrino flavor oscillations in a curved space-time*, Gen. Rel. Grav. **47** 5, 62 [gr-qc/1410.1523] (2015).

7. **L. Visinelli**, *Cosmological perturbations for an inflaton field coupled to radiation*, JCAP **1501**, 005 [astro-ph/1410.1187] (2015).

6. **L. Visinelli**, S. Masina, M. Vichi, and A. Storto, *Impacts of Physical Data Assimilation on the Global Ocean Carbonate System*, Biogeosciences Discussions **11** (4), 5399-5441 (2014).

5. P. Gondolo and **L. Visinelli**, *Axion Cold Dark Matter in view of BICEP2 results*, Phys. Rev. Lett. **113**, 011802, Editor's Suggestion [hep-ph/1403.4594] (2014).

4. **L. Visinelli**, *Axion-Electromagnetic Waves*, MPLA **28**, 35 [physics.class-ph/1401.0709] (2013).

3. **L. Visinelli**, *Natural Warm Inflation*, JCAP **1109**, 013 [astro-ph/1107.3523] (2011).

2. **L. Visinelli** and P. Gondolo, *Axions Cold Dark Matter in Nonstandard Cosmologies*, Phys. Rev. D **81**, 063508 [astro-ph/0912.0015] (2010).

1. **L. Visinelli** and P. Gondolo, *Dark Matter Axions Revisited*, Phys. Rev. D **80**, 035024 [astro-ph/0903.4377] (2009).

Technical reports

5. R. X. Adhikari *et al*, *Report of the Topical Group on Cosmic Probes of Fundamental Physics for for Snowmass 2021* [hep-ex/2209.11726] (2022).

4. J. Jaeckel, G. Rybka, L. Winslow, *et al*, *Axion Dark Matter* [hep-ex/2203.14923] (2022).

3. D. Antypas *et al*, *New Horizons: Scalar and Vector Ultralight Dark Matter* [hep-ex/2203.14915] (2022).

2. C. Benedetti *et al*, *Advanced accelerator linear collider demonstration facility at intermediate energy* [physics.acc-ph/2203.08425] (2022).

1. D. Alesini *et al*, *KLASH Conceptual Design Report* [ins-det/1911.02427] (2019).

Articles currently under review

5. G. Montefalcone, V. Aragam, **L. Visinelli**, and K. Freese, *Observational constraints on warm natural inflation*, Submitted to JCAP [gr-qc/2212.04482] (2022).

4. G. Montefalcone, V. Aragam, **L. Visinelli**, and K. Freese, *Constraints on the scalar-field potential in warm inflation*, Submitted to Phys. Rev. D [gr-qc/2209.14908] (2022).

3. S. Vagnozzi, R. Roy, Y.-D. Tsai, **L. Visinelli**, and others, *Horizon-scale tests of gravity theories and fundamental physics from the Event Horizon Telescope image of Sagittarius $A^\star$*, submitted to Phys. Rev. D [gr-qc/2205.07787] (2022).

2. Y.-D. Tsai, Y. Wu, S. Vagnozzi, and **L. Visinelli**, *Asteroid $g-2$ experiments: new fifth force and ultralight dark sector tests*, Submitted to JCAP [hep-ph/2107.04038] (2022).

1. A. Litsa, K. Freese, E. Sfakianakis, P. Stengel, and **L. Visinelli**, *Primordial non-Gaussianity from the Effects of the Standard Model Higgs during Reheating after Inflation*, Submitted to JCAP [hep-ph/2011.11649] (2022).

Proceedings

2. **L. Visinelli**, *Analytic expressions for the kinetic decoupling of WIMPs*, Journal of Physics - Conference Series **718** [astro-ph/1601.00817] (2016).

1. **L. Visinelli** and P. Gondolo, *Axion Cold Dark Matter Revisited*, Journal of Physics - Conference Series **203** [astro-ph/0910.3941] (2010).

Articles in preparation

3. A. D'Elia *et al*, *Search for axions with the Finuda magnet for Light Axion SearcH (FLASH) haloscope at INFN*, in preparation (collaboration with Frascati laboratories).

2. L. Walters *et al*, *A search for axions-photon conversions in the Andromeda galaxy using the Green Bank Telescope*, in preparation (collaboration with astronomers at University of Virginia).

1. V. Aragam, G. Montefalcone, **L. Visinelli**, and K. Freese, *On the numerical computation of perturbations in warm inflation*, in preparation.

White papers

Currently contributing to the Next generation Event Horizon Telescope (**ngEHT**) White Paper (in preparation), based on my experience with the articles 2205.06238, 2112.06932, 2001.02986, 1904.12983.

Invited talks

45. 01/26/23 DESY (DE), Novel Cosmological Bounds on Thermally-produced Axion-like Particles
44. 05/20/22 Chinese Academy of Science, Beijing (CHN), Radio signals from axions conversion
43. 04/27/22 KEK, Tsukuba (JP), Radio signals from axions conversion
42. 04/08/22 Indian Institute of Technology, Mumbai (IN), Superradiance evolution of black hole shadows
41. 12/15/21 Helsinki Institute of Physics (FI), Axion miniclusters in the Milky Way
40. 10/14/21 SISSA, Trieste (IT), Radio signals from axion miniclusters colliding with neutron stars
39. 06/11/21 University of L'Aquila (IT), The population of axion miniclusters in the Galaxy
38. 04/26/21 Shanghai Jiao Tong University, Shanghai (CHN), Direct detection of dark energy
37. 02/17/21 Kavli IPMU, Tokyo (JP), *The interplay of primordial black holes and particle dark matter*
36. 11/04/20 Institute of Physics, Academia Sinica (TW), *Compact objects and dark matter*
35. 10/13/20 Undergraduate seminar, Colgate University (NY), *One dark matter candidate: the axion*
34. 06/04/20 International Institute of Physics, Natal (BR), *Radio and gravitational wave signals from cosmic axions* [*LINK to the YouTube video on the IIP channel: https://rb.gy/tsg0of*]
33. 05/11/20 Newton 1665 webinars series, *New physics out of the Shadow*
[*LINK to the YouTube video on the Newton1665 channel: https://www.youtube.com/watch?v=yCDUfzv8oKY*]
32. 04/29/20 Latin American Webinars (LAWphysics) series, *Astrophysics with axion stars and miniclusters*
[*LINK to the YouTube video on the LAWphysics channel: https://www.youtube.com/watch?v=ilfmBKMgyH8*]
31. 04/07/20 University of Texas at Austin (USA), *The future of light boson dark matter*
30. 03/02/20 DAMTP Institute of Astronomy, University of Cambridge (UK), *Light boson dark matter*
29. 12/20/19 National Institute Of Chemical Physics And Biophysics, Tallinn (ES), *Light boson dark matter*
28. 11/27/19 Fudan University, Shanghai (CHN), *Testing the rotational nature of the supermassive object M87**
27. 11/25/19 Shanghai Jiao Tong University, Shanghai (CHN), *Light bosons as dark matter candidates*
26. 11/07/19 Nordita, Stockholm (SE), *Testing the rotational nature of the supermassive object M87**
25. 05/21/19 INFN Frascati, Rome (IT), *Axion miniclusters and implications for axion detection*
24. 05/10/19 Wayne State University, MI (USA), *Probing the Early Universe with Axion Physics*
23. 05/01/19 Kavli Institute for Cosmological Physics, IL (USA), *Probing the Early Universe with Axions*
22. 04/30/19 Argonne National Laboratory, IL (USA), *Probing the Early Universe with Axions*
21. 04/25/19 University of Michigan, MI (USA), *The Quest for the Axion*
20. 04/17/19 Barry University, FL (USA), *Introduction to Cosmology and Particle Physics*
19. 04/12/19 University of Florida, FL (USA), *Probing the Early Universe with Axion Physics*

18. 04/04/19 IFIC, Valencia (ES), *Probing the Early Universe with Axions*
17. 01/08/19 SISSA, Trieste (IT), *The Cold Dark Matter axion and Axion Stars*
16. 10/23/18 Nikhef Amsterdam (NL), *The Quest for the Axion*
15. 11/30/18 INFN Frascati, Rome (IT), *Motivations for the search of light axions*
14. 10/23/18 University of Bologna (IT), *Searching for Axions and the String Axiverse in the Cosmo*
13. 10/18/18 INFN Frascati, Rome (IT), *Searching for Axions in the Lab and in the Cosmo*
12. 04/11/18 Latin American Webinars (LAWphysics) series, *The axion in cosmology and astrophysics [LINK to the YouTube video on the LAWphysics channel: https://www.youtube.com/watch?v=YWqVpPrpLjw]*
11. 02/01/18 CEICO, Prague (CZ), *The Cold Dark Matter axion and Axion Stars*
10. 12/01/17 University of Turin (IT), *The Cold Dark Matter axion and Axion Stars*
9. 08/16/17 University of Oslo (NO), *Dark matter capture and neutrino observatories*
8. 06/15/17 University of Bologna (IT), *Dark matter capture and neutrino observatories*
7. 02/01/07 University of Michigan, MI (USA), *Axion cold dark matter, miniclusters, and axion stars*
6. 10/25/16 University of Helsinki (FI), *Axion cold dark matter, status and perspectives*
5. 01/21/16 University of Zaragoza (ES), *Axion cold dark matter, status and perspectives*
4. 06/03/13 CMCC Lecce (IT), *Impacts of Data Assimilation on the Global Ocean Carbonate System*
3. 06/15/11 University of Pisa (IT), *Axion cold dark matter in standard and non-standard cosmologies*
2. 10/12/10 University of New Mexico, NM (USA), *An integral equation for distorted-wave amplitudes*
1. 05/21/09 University of Bologna (IT), *Axion cold dark matter revisited*

Conference talks

35. 09/11-15 23 Planned plenary talk on axions at TeVPA 2023 (Italy), *T.B.D. plenary talk on axions*
34. 06/19-21 23 New Horizons in Primordial Black Hole physics (NEHOP), Napoli (Italy), *Primordial black holes and particle dark matter are intimately intertwined*
33. 02/23-24 23 Kick-off Meeting of COST Action COSMIC WISPers, INFN Frascati (Italy), *T.B.D.*
32. 11/18-20 22 Shanghai Particle Physics and Cosmology Symposium 2022 (CHN), *Novel Cosmological Bounds on Thermally-produced Axion-like Particles*
31. 11/29-12/03 21 Sixth Colombian Meeting on High Energy Physics, Santa Marta (CO), *Plenary speaker: Future probes of light bosons*
30. 10/12-13/21 Cosmology Frontier in Particle Physics: Astroparticle Physics and Early Universe, NCTS NTU, *Axion miniclusters in the Milky Way*
29. 07/5-16/21 Cosmology from Home 2021, *Direct detection of dark energy* [LINK to YouTube video]
28. 05/15/21 TDLI International Workshop "Current Topics on Axion", Shanghai Jiao Tong University, Shanghai (CHN), Indirect probes of axion dark matter

27. 10/13-16/20 The 5th IBS-IFT-MultiDark Workshop, Institute for Basic Science (IBS), Daejeon (KR), *Recent and future developments of dark matter axion physics*
26. 09/24/20 CoCo 2020: Cosmology in Colombia, Bogotá (CO), *Constraints on Reheating to SM Particles due to Large Effective Higgs Boson Mass*
25. 08/24/20 Cosmology from Home 2020, *Axion Miniclusters: Tidal Disruption and Radioastronomy* [LINK]
24. 07/21/20 IDM2020, Zurich (CH), *The future of Axion Physics*
23. 12/2-6/19 TeVPA 2019, Sydney (AU), *Probing the Early Universe with Axion Physics*
22. 06/24-06/26 Vera Rubin Fest, Washington DC (USA), *Axions*
21. 06/10-14/19 Invisibles19, Valencia (ES), *Coordinating one of the panel discussion session*
20. 12/18/18 SLAP 2018, King's College London (UK), *The Cold Dark Matter axion and Axion Stars*
19. 12/11/18 The quest for New Physics, Instituto de Física Corpuscular (ES), *Axion Stars*
18. 09/05/18 Invisibles18 Workshop, Karlsruhe Institute of Technology (DE), *Dilute and dense axion stars*
17. 06/20/18 14th Patras Workshop, DESY Hamburg (DE),
The Higgs Boson can delay Reheating after Inflation
16. 06/12/18 Preparing for Dark Matter Particle Discovery, Chalmers University of Technology, Goteborg (SE),
The Higgs Boson can delay Reheating after Inflation
15. 03/07/18 Ultralight Dark Matter and Axions, University of Michigan (USA),
The parameter space of axion-like particles
14. 02/22/18 UCLA Dark Matter 2018, UCLA (USA), *Axions in cosmology and astrophysics*
13. 08/31/17 DaνCO, CP^3 Origin (DK), *Axions and ALPs as the Cold Dark Matter*
12. 08/04/17 Self-interacting dark matter, Niels Bohr Institute (DK), *Sharpening Fuzzy Dark Matter*
11. 07/19/17 Advances in Theoretical Cosmology in Light of Data Nordita (SE), *Axion dark matter*
10. 12/06/16 Axion Dark Matter workshop, Nordita (SE), *Axion dark matter, miniclusters, and axion stars*
9. 08/12/16 IDM2016, Sheffield (UK), *Galactic Cold Dark Matter from First Principles*
8. 09/07/15 TAUP 2015, Turin (IT) *Analytical expressions for the kinetic decoupling of WIMPs*
7. 11/19/14 GEOCARBON Final Meeting, Paris (FR),
Summary contribution to GEOCARBON from Land and Ocean Components
6. 07/08/14 NEMO Users Meeting, Grenoble (FR),
Assimilation of Physical and Carbonate Data on the Global Ocean Carbonate System
5. 10/15/10 American Physical Society Four Corners Meeting, Ogden (USA),
An integral equation for distorted-wave amplitudes
4. 07/13/10 PPC 2010 Conference, Turin (IT), *An integral equation for distorted-wave amplitudes*
3. 03/28/10 SnowPac & SnowCluster 2010, Alta (USA), *Axion dark matter in non-standard cosmologies*
2. 07/02/09 TAUP 2009, Rome (IT), *Axion cold dark matter revisited*
1. 10/20/07 American Physical Society Four Corners, Flagstaff (USA),
Oscillation amplitude for neutrino wave packets

Workshop attendance

April 2017 The 5th MCTP Spring Symposium, Ann Arbor, MI (USA)

September 2014 Data Assimilation in Ocean Physics, Trieste (Italy)

June 2013 Advanced School on Data Assimilation, Bologna (Italy)

December 2009 Focus week on indirect dark matter search, IPMU Tokyo (Japan)

Outreach: Presenting science to popular audience

July 2022 South physics observatory astronomy summer camp "Astronomy for Future Scientists", The University of Utah. Host: Paul Ricketts.

January 2022 Virtual interview with the online newspaper "Fanpage" on dark energy (in Italian) [Youtube link]

September 2021 Interview for the podcast "co.scienza" (in Italian), aimed at young researchers [Link]

August 2021 Public lecture "Le cinque ere dell'Universo e la vita su altri pianeti" (In Italian). Youtube links: PART 1 PART 2

August 2020 Public lecture "Buchi neri e onde gravitazionali: La ricerca in Italia" (In Italian). Youtube links: PART 1 PART 2

March 2016 Public lecture "Capire le onde gravitazionali" (In Italian), Bologna.

November 2015 Public lecture "Physics for everybody!" (In Italian), Bologna.

February 2013 Public lecture "Galileo, father of the scientific method" (In Italian), Bologna.

April 2011 Public lecture "Dark Matters", The University of Utah, Math Department.

Visiting researcher

4/20–5/20 2019 University of Michigan (MI)

Apr 10–20 2019 Barry University (FL)

Jan 20–31 2019 INFN Frascati (IT)

May 1–15 2017 Perimeter Institute (CA)

Feb 25–30 2017 MIT (MA)

Jan–Feb 2017 University of Michigan (MI)

Additional work experience

2015 **Editing work for JCAP and JHEP**, Sissa-Medialab publications, Trieste (Italy)

2015 – 2016 **High school teacher**, Private High School "M. Malpighi", Bologna (Italy)

2015 – 2016 **High school teacher**, Public High School "E. Majorana", Bologna (Italy)

2011 – 2016 **Private tutoring** in mathematics and physics for high school and university students.

2012 – 2013 **Quantitative Analyst**, Iason LTD, Milan www.iasonltd.com.
I have implemented a set of numerical codes aimed at pricing defaultable coupon bonds in C/C++, Matlab, Excel. My personal contribution has been cited in:
A. Castagna and F. Fede, *Measuring and Managing Liquidity Risk*, Wiley (2013).

2011 – 2012 **Editor for high-school mathbooks**, Zanichelli Editore.

Other Experiences

2014 - 2016 **Elected as Town Councilor**, *Comune di Loiano (Bologna)*, Italy.

2015 **Voluntary affiliation, Italian Civil Protection Department**, *Loiano (Bologna)*, Italy.

September 2011 - March 2012 **Mathematics and Finance**, *Università di Bologna*, Italy.
Intensive six-months course on: Stochastic Calculus, Assessment of Financial Risk, Computational Finance, Application of Big Data to Finance, Interest Rates and Risk

Other Interests

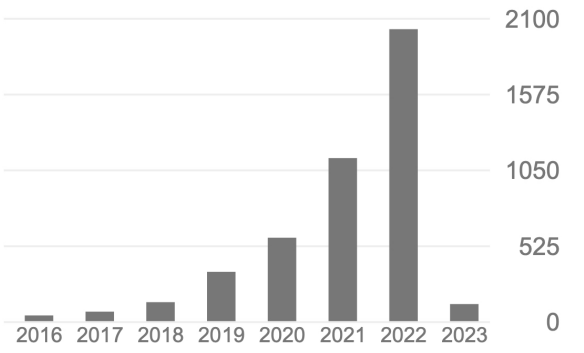
Music I play both electric and classical guitar. I have played in several groups spanning different styles (blues, rock, metal).

Sport I have practiced Chinese Martial Arts for several years. I train regularly.

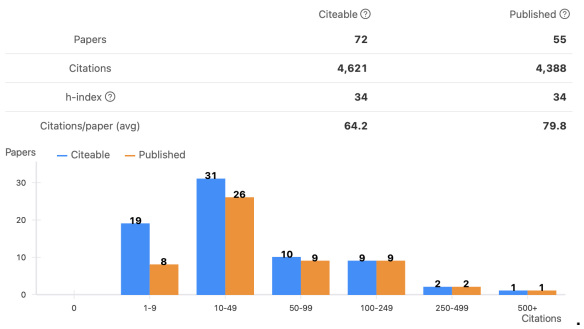
Books I usually read during holidays, especially science fiction and philosophical essays.

Summary of statistics as of January 18, 2023

	All	Since 2018
Citations	4673	4374
h-index	35	33
i10-index	51	51



Citations per year (Google Scholars)



Total number of citations (HEP-INSPIRE)

References (currently writing letters for my profile)

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January 18, 2023

Luca Visinelli