

LUCA VISINELLI

"Fellini" Marie Curie Fellow

*Istituto Nazionale di Fisica Nucleare INFN
Laboratori Nazionali di Frascati*

+39 349 470 3231

✉ luca.visinelli@lnf.infn.it

📄 lucavisinelli.com

📱 [luca.visinelli](https://www.linkedin.com/in/lucavisinelli)

Education

- December 16, 2011 **Ph.D. in Physics**, *The University of Utah*, Salt Lake City, USA.
Advisor: Dr. Paolo Gondolo. Thesis: [Axions in CDM and inflation models](#)
- August 6, 2011 **M.Sc. in Physics**, *The University of Utah*, Salt Lake City, USA.
Advisor: Dr. Paolo Gondolo. Topics: Theoretical physics
- June 22, 2007 **M.Sc. in Physics**, *University of Bologna*, Italy.
Advisor: Dr. Fiorenzo Bastianelli. Thesis: [Neutrino oscillations in curved spacetime](#).
Grade: 110/110 *cum Laude*
- October 14, 2005 **B.Sc. in Physics**, *University of Bologna*, Italy.
Advisor: Dr. Giovanni Carlo Bonsignori. Thesis: *The Interacting Boson Model*.
Grade: 110/110 *cum Laude*
- July 4, 2002 **High School Diploma**, *High School "E. Fermi"*, Bologna, Italy.
Grade: 100/100

Research Experience

- 2019 – 2020 **Post-doctoral researcher**, [GRAPPA Amsterdam](#) (Netherlands)
Principal investigator: Prof. Christopher Weniger (GRAPPA Amsterdam)
I am currently working on models linking the evolution of dark energy with Planck and supernovae data, aimed at easing the H_0 tension. I am also working on astroparticles, in particular on models of light bosons as the dark matter.
- 2018 – 2019 **Post-doctoral researcher**, [Uppsala University](#) (Sweden)
Principal investigator: Prof. Ulf Danielsson (Uppsala University)
I have worked on models linking the evolution of dark energy with Planck and supernovae data, aimed at easing the H_0 tension.
- 2016 – 2018 **Post-doctoral researcher**, [Stockholm University and Nordita](#) (Sweden)
Principal investigator: Prof. Katherine Freese (U. of Michigan and Stockholm U.)
I have worked on axion cosmology, the Higgs field as a spectator during inflation, capture of dark matter by massive bodies and by primordial black holes, modelling and evolution of dark stars with the [MESA](#) stellar code. [Here is my interview at Stockholm University](#).
- 2013 – 2015 **Postdoctoral fellow**, [Mediterranean Center on Climate Changes \(CMCC\)](#), Bologna (Italy)
Principal investigators: Simona Masina (2013-2015), Marcello Vichi (2013-2014);
I have developed a numerical code for assessing the global ocean carbon uptake, aiming to assess the global carbon flux within the GeoCarbon project <http://www.geocarbon.net>.
- 2007 – 2011 **Doctoral thesis researcher**, *The University of Utah* (USA)
Advisor: Prof. Paolo Gondolo (U. of Utah)
I worked on axions in models of cold dark matter and inflation.
- 2007 – 2011 **Bachelor thesis researcher**, *University of Bologna* (Italy)
Advisors: Prof. Fiorenzo Bastianelli (Bologna U.), Prof. Paolo Gondolo (U. of Utah)
Bachelor thesis on neutrino flavour oscillations in curved space-time.

Participation in Research and Development Contracts

- 2020-today 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: Dott. 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 (UT 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.

Certifications

- 2020 **Abilitazione Scientifica Nazionale** "Professore di II fascia nel SC 02/A2 - Fisica Teorica delle Interazioni Fondamentali" (Italian enabling for associate professor enrollment, valid over 09/11/2020-09/11/2029)

Grants and Fellowships Awarded

- November 2020 **Tenure-track position** offered as Associate Professor at Shanghai Jiao Tong University, jointly with a Fellowship at the [Tsung-Dao Lee Institute](#).
- November 2020 [Fellini Fellowship under Marie Skłodowska-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

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.

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
Statistics (INSPIRE)	51 articles, 34 JCR publications, 1800+ citations, 48.8 average citations per referred paper, h-index=26 (as of May 13, 2021)
INSPIRE	My article list on https://inspirehep.net
ORCID	0000-0001-7958-8940
ResearcherID	E-9985-2018
Scopus	34168444500
Google Scholar	https://scholar.google.it/citations
ArXiv	My article list on https://arxiv.org
GIT Repository	https://github.com/lucavisinelli

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

2019–today	I am mentoring Ph.D. student Youjia Wu (University of Michigan). Advisor: Katherine Freese; topics: dark matter physics and stellar formation.
2019–2020	I supervised Master student Nicklas Ramberg (Uppsala University), now at Mainz University. [LINK TO NICKLAS RAMBERG'S MASTER THESIS]
2018–2019	I have mentored Ph.D. student Irina Galstyan (Stockholm University). Advisor: Katherine Freese; topics: neutrino detection.
2017	I have mentored Ph.D. student Janina Renk (Stockholm University). Advisors: Katherine Freese, Joakim Edsjö; topics: stellar evolution with MESA .

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.

Service in Editorial Boards

- 2020-2021 I am among the guest editors for the Special Issue of the journal Universe “*Dark Matter and Dark Energy: Particle Physics, Cosmology, and Experimental Searches*”, to be published in 2021. Link: www.mdpi.com/journal/universe/special_issues/DM_DE.

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

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

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>

34. 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).
33. 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).
32. 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).
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).
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 super-massive 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** and P. Gondolo, *Kinetic decoupling of WIMPs: analytic expressions*, *Phys. Rev. D* **91** 8, 083526 [[astro-ph/1501.02233](#)] (2015).
9. **L. Visinelli**, *Neutrino flavor oscillations in a curved space-time*, *Gen. Rel. Grav.* **47** 5, 62 [[gr-qc/1410.1523](#)] (2015).
8. **L. Visinelli**, *Cosmological perturbations for an inflaton field coupled to radiation*, *JCAP* **1501**, 005 [[astro-ph/1410.1187](#)] (2015).
7. **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 (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).

Articles currently under review or recently accepted

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

6. 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*, Submitted to Class. Quant. Grav. [[hep-ph/2103.01183](#)] (2021).
5. T. Edwards, B. Kavanagh, **L. Visinelli**, and C. Weniger, *Transient Radio Signatures from Neutron Star Encounters with QCD Axion Miniclusters*, Submitted to Phys. Rev. Lett. [[hep-ph/2011.05378](#)] (2021).
4. B. Kavanagh, T. Edwards, **L. Visinelli**, and C. Weniger, *Stellar Disruption of Axion Miniclusters in the Milky Way*, Submitted to Phys. Rev. D [[astro-ph/2011.05377](#)] (2021).
3. 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 Phys. Rev. Lett. [[hep-ph/2011.11649](#)] (2021).
2. 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*, Submitted to Phys. Rev. D [[hep-ph/2009.14218](#)] (2021).
1. B. Carr, F. Kühnel, and **L. Visinelli**, *Black Holes and WIMPs: All or Nothing or Something Else*, Submitted to Mon. Not. Roy. Astron. Soc. [[astro-ph/2011.01930](#)] (2021).

Technical reports

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

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. Y. Wu, S. Baum, K. Freese, **L. Visinelli**, and H. Yu, *Self-interacting dark matter and the first stars*, in preparation.
2. E. di Valentino *et al.*, *Cosmology Intertwined White Paper*, in preparation.
1. F. Giacchino, E. Nardi, and **L. Visinelli**, *Dark Matter from the axion portal*, in preparation.

Letters of Intent (contributed)

4. E. di Valentino *et al.*, *Cosmology Intertwined IV: The Age of the Universe and its Curvature*, [astro-ph/2008.11286](#) (2020).
3. E. di Valentino *et al.*, *Cosmology Intertwined III: $f\sigma_8$ and S_8* , [astro-ph/2008.11285](#) (2020).
2. E. di Valentino *et al.*, *Cosmology Intertwined II: The Hubble Constant Tension*, [astro-ph/2008.11284](#) (2020).
1. E. di Valentino *et al.*, *Cosmology Intertwined I: Perspectives for the Next Decade*, [astro-ph/2008.11283](#) (2020).

Outreach: Presenting science to popular audience

- 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.

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)

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)
- Mar 6 –10 2017 Harvard University (MA)
- Feb 25–30 2017 MIT (MA)
- Jan–Feb 2017 University of Michigan (MI)

Invited talks

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

28. 05/15/21 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](#), *Axion Miniclusters: Tidal Disruption and Radioastronomy*
24. 07/21/20 [IDM2020](#), Zurich (CH), *The future of Axion Physics*
23. 09/2-6/19 [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 [DaVCO](#), CP³ 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

Other Experiences

- May 2014 - September 2016 [Elected as Town Councilor](#), *Comune di 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 (Wushu) for several years. I train regularly.
- Books I usually read during holidays, especially science fiction and historical reconstructions.

References (currently writing letters for my profile)

Christoph Weniger **Associate Professor (Postdoc supervisor),**
• GRAPPA, University of Amsterdam
Room C4.160, Science Park 904, 1098 XH Amsterdam, NL.
Tel. +31 20525 6294, Email: c.weniger@uva.nl.

Katherine Freese **Full Professor (Postdoc supervisor),**
• Department of Physics, University of Texas at Austin
2515 Speedway, Austin TX 78712 USA;
• Department of Physics, Stockholm University
Roslagstullsbacken 21 A 10691 Stockholm, Sweden .
Tel. +1 734 604 1325, Email: ktfreese@umich.edu.

Paolo Gondolo **Full Professor (Ph.D. supervisor),**
• Department of Physics and Astronomy, The University of Utah
115 S 1400 E #201, Salt Lake City, UT 84112-0830.
Tel. +1 801 581 77 88, Email: paolo.gondolo@utah.edu.

Frank Wilczek **Full Professor,**
• Department of Physics, Massachusetts Institute of Technology
77 Massachusetts Ave, 6-301. Cambridge, MA 02139 USA;
• Department of Physics and Origins Project, Arizona State University
Tempe, AZ 25287 USA
• Department of Physics, Stockholm University
Roslagstullsbacken 21 A 10691 Stockholm, Sweden
• T. D. Lee Institute and Wilczek Quantum Center, Shanghai Jiao Tong University
Shanghai 200240, China.
Tel. +1 617 253 0284, Email: wilczek@mit.edu.
Secretary [for reference letters]: Anne.Dominic@asu.edu.

Javier Redondo **Associate Professor,**
Theoretical physics dept., Zaragoza University,
C/ Pedro Cerbuna 12 E-50009, Zaragoza, Spain.
Tel. +34 876 553312, Email: jredondo@unizar.es.

Fiorenzo Bastianelli **Associate Professor (Bachelor supervisor),**
• Department of Physics and Astronomy, University of Bologna
Via Irnerio 46 40126 Bologna, Italy.
Tel. +39 051 209 11 86, Email: Fiorenzo.Bastianelli@bo.infn.it.