

# Curriculum Vitae of Alberto Roper Pol (PhD)

Research group leader (SNSF Ambizione fellow) at the University of Geneva  
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## Education

**PhD** in Aerospace Engineering Sciences, *Aug. 2020*. University of Colorado. Boulder, CO. USA.

Dissertation thesis: “*Generation of Gravitational Waves due to Magnetohydrodynamic Turbulence in the Early Universe.*” Advisor: Axel Brandenburg.

**MSc** in Aerospace Engineering Sciences, *Dec. 2017*. University of Colorado. Boulder, CO. USA.

**MSc** Certificate in Oceanic and Atmospheric Sciences, *Dec. 2017*.

Undergraduate and graduate-level courses of the Physics and Mathematics degrees at the National University of Distance Education (UNED).

**BSc** in Aerospace Engineering, *Jul. 2015*. Polytechnic University of Catalonia (UPC).  
Barcelona, Spain.

## Research experience

- Feb. 2023–Present** **Research group leader (SNSF Ambizione fellow)** at the Geneva Cosmology and Astroparticle physics group. *Université de Genève*. Geneva, Switzerland.
- Sep. 2022–Jan. 2023** **Postdoctoral researcher** at the Geneva Cosmology and Astroparticle physics group. *Université de Genève*. Geneva, Switzerland.  
*Supervisors:* Chiara Caprini, Ruth Durrer, Martin Kunz.
- Sep. 2020–Sep. 2022** **Postdoctoral researcher** at the theory group of the *Astroparticule et Cosmologie* (APC) Institute. *Université Paris Cité*. CNRS. Paris, France.  
*Supervisors:* Chiara Caprini, Andrii Neronov, Dmitri Semikoz.
- Jan. 2019–Dec. 2022** **Visiting researcher** at Ilia State University. Tbilisi, Georgia.  
*Host:* Tina Kahniashvili.
- Jan. 2017–Aug. 2020** **Graduate research assistant** at the Laboratory for Atmospheric and Space Physics (LASP). University of Colorado. Boulder, CO. USA.  
*Supervisors:* Axel Brandenburg, Brian Argrow.
- 2018–2019** **Visiting PhD fellow** at the Nordic Institute for Theoretical Physics (NORDITA). Stockholm, Sweden. *Host:* Prof. Axel Brandenburg.
- Aug. 2015–Jan. 2017** **Graduate research assistant** at the Uncertainty Quantification Group of the Aerospace Engineering Department. University of Colorado. Boulder, CO. USA.  
*Supervisor:* Alireza Doostan.
- Feb.–Jul. 2015** **Undergraduate research assistant** at the *Institut Pprime* at the *École Nationale Supérieure de Mécanique et d’Aérotechnique* (ISAE–ENSMA). Futuroscope, France.  
*Supervisor:* Frédéric Pons.
- Sep. 2014–Jul. 2015** **Undergraduate research assistant** at the Heat and Mass Transfer Technological Center (CTTC) of the *Universitat Politècnica de Catalunya* (UPC). Barcelona, Spain.  
*Supervisors:* Assensi Oliva, Oriol Lehmkuhl.
- Jun.–Sep. 2014** **Banco Santander fellow researcher** at Termofluids. Barcelona, Spain.

## Language skills:

Spanish, English, Catalan (native), French (good command, B2), German and Italian (basic).

## Teaching experience

<i>Jan. 12–23, 2026</i>	<b>Lecturer</b> at the Nordita Winter School “ <i>Cosmological Magnetic Fields: Generation, Observation, and Modeling.</i> ” Nordita, Stockholm, Sweden.
<i>Oct. 20–24, 2025</i>	<b>Lecturer</b> at the 1st PENCIL CODE school on “ <i>Early Universe physics and Gravitational Waves.</i> ” CERN, Geneva, Switzerland.
<i>Sep. 22–26, 2025</i>	<b>Lecturer</b> on magnetohydrodynamics at the third “ <i>Cosmo-Lattice school.</i> ” IBS Center for Theoretical Physics of the Universe, Daejeon, South Korea.
<i>May 21–24, 2024</i>	<b>Co-lecturer</b> of 2 ECTS EPFL course “ <i>Simulations of Early Universe Magnetohydrodynamics.</i> ” Lausanne, Switzerland. Co-lectured with <i>J. Schober</i> .
<i>Nov. 2020–Feb. 2021</i>	<b>Online lecturer</b> on <i>Quantum Chemistry</i> to undergraduate students.
<i>Jan.–May 2020</i>	<b>Graduate teaching assistant</b> in ASEN 1022 “ <i>Materials Science for Aerospace Engineers</i> ” at the University of Colorado. Boulder, CO. USA.
<i>Jan.–May 2019</i>	<b>Graduate teaching assistant</b> in ASEN 6061 “ <i>Molecular Gas Dynamics and Direct Simulation Monte Carlo</i> ” at the University of Colorado.

## Advising experience

**PhD students (main advisor):** *Antonino S. Midiri* (University of Geneva), 2023–2027

**MSc students (main advisor):** *Madeline Salomé* (EPFL), Sep. 2024–Aug. 2025, successfully defended, now PhD student at IP2I in Lyon.

**PhD mentees:** *Isak Stomberg* at DESY (2024, main supervisor: Thomas Konstandin, currently postdoc at IFIC, Valencia), *Yutong He* at Nordita (2024, main supervisor: Axel Brandenburg, currently working in industry).

**Co-supervision of postdoc** *Kenneth Marschall* in a joint project with D. G. Figueroa at IFIC.

**PhD mentees (LECS mentorship program):** *Zarnigah Kayani* (2023–2024),  
*Vivienne Langen* (2022–2023), *Sofia Canevarolo* (2021–2022).

## Collaborations and peer-review referee

**Core member** of the Laser Interferometer Space Antenna (**LISA**) Consortium:

- Member of the **Cosmology Working group** and the **Swiss theory group**.
- Member of LISA Early Career Scientists (**LECS**).

**Full member** of the European Pulsar Timing Array (EPTA) and International PTA (IPTA) Collaborations, **co-leadear of the new physics group**.

**Member** of the Lunar Gravitational Wave Antenna (**LGWA**) Working Group.

**Member** of the *Groupement de Recherche Ondes Gravitationnelles*.

**Member** of the European Consortium for Astroparticle Theory (**EuCAPT**).

**Junior member** of the International Astronomical Union (**IAU**).

**Referee reviewer** for *J. Cosmol. Astropart. Phys.* (JCAP), *Phys. Rev. D* (PRD), *Phys. Rev. Lett.* (PRL) and *Nature Astronomy*.

**Reviewer for scientific applications** for *Humboldt Research Fellowship* (Germany).

## Code developing experience

**Active developer** of the open-source PENCIL CODE, stored on [GitHub](#), with almost 100 developers.

I am one of the 20 code administrators.

**Active developer** of the open-source *CosmoLattice* contributing to the development of the MHD solver.

**Main developer** of the COSMOGW code, stored on [GitHub](#), released v1.0 in Aug. 2025, installable via [PyPi](#) (using `pip install`), see documentation in Read the Docs.

**Main developer** of the `GW_turbulence`, public package for gravitational wave backgrounds from MHD turbulence.

## Organization experience

- **Main organizer** of the “*1st PENCIL CODE school on early universe physics and gravitational waves*” (Oct. 20–24, 2025) and the “*21st PENCIL CODE user meeting 2025*” (Oct. 27–31, 2025) at CERN, Geneva, Switzerland. Funded 17k CHF.
- **Co-organizer** of the CERN TH institute “*Advancing gravitational wave predictions from cosmological first-order phase transitions*” (Aug. 25–29, 2025) at CERN, Geneva, Switzerland. Organized with C. Caprini, S. Procacci, P. Schicho, J. van de Vis. Funded 10k CHF.
- **Main organizer** of the 3-week Nordita program “*Numerical simulations of early Universe sources of gravitational waves*” (Jul. 28–Aug. 15, 2025) at the Nordic Institute for Theoretical Physics (Nordita), Stockholm, Sweden. Organized with C. Caprini, A. Drew, D. G. Figueroa, D. Weir. Funded 440k SEK (~40k EUR).
- **Main organizer** of the 6-week program “*Generation, evolution, and observations of cosmological magnetic fields*” (Apr. 29–Jun. 7, 2024) at the Bernoulli Center for Fundamental Studies at EPFL, Lausanne, Switzerland. Organized with A. Boyarsky, C. Caprini, M. Hirschmann, T. Montaruli, A. Neronov, Y. Revaz, J. Schober. Funded 100k CHF.
- **Organizer** of the APC theory group weekly seminar (Sep. 2020–Sep. 2022).

## Extended collaborative visits

<i>September 2022–Present</i>	CERN, Geneva, Switzerland.
<i>Dec. 2025</i>	Ilia State University, Tbilisi, Georgia. <i>Host: Tina Kahniashvili</i>
<i>Jan. 2025</i>	IUCAA, Pune, India. <i>Host: Kandaswamy Subramanian</i>
<i>December 2023, 2024</i>	IFIC, Valencia, Spain <i>Host: Daniel Figueroa</i> .
<i>January 2024</i>	DESY, Hamburg, Germany. <i>Host: Thomas Konstandin</i>
<i>October 2023</i>	Nordita, Stockholm, Sweden. <i>Host: Axel Brandenburg</i>
<i>November 2021</i>	CERN and Université de Genève, Geneva, Switzerland. <i>Host: Chiara Caprini</i>
<i>December 2019</i>	Ilia State University, Tbilisi, Georgia. <i>Host: Tina Kahniashvili</i>
<i>August–December 2019</i>	Nordita, Stockholm, Sweden. <i>Host: Axel Brandenburg</i>
<i>February 2019</i>	CMU, Pittsburgh (PA), USA. <i>Host: Tina Kahniashvili</i>
<i>August–November 2018</i>	Nordita, Stockholm, Sweden. <i>Host: Axel Brandenburg</i>
<i>May 2018</i>	CMU, Pittsburgh (PA), USA. <i>Host: Tina Kahniashvili</i>

## Awards and Grants as PI

- Awarded **17k CHF** to organize the CERN TH institute: “PENCIL CODE school on early universe physics and gravitational waves and 21st PENCIL CODE user meeting 2025” (Oct. 20–31, 2025)
- Awarded **10k CHF** to co-organize the CERN TH institute “Advancing gravitational wave predictions from cosmological first-order phase transitions” (Aug. 25–29, 2025)
- Awarded **440k SEK** (~ 40k EUR) to organize the Nordita program “Numerical simulations of early Universe sources of gravitational waves” (Jul. 28–Aug. 15, 2025).
- Awarded **100k CHF** to organize the Bernoulli program “Generation, evolution, and observations of cosmological magnetic fields” (Apr. 29–Jun. 7, 2024).
- PI of the SNSF *Ambizione* grant 208807: “***Exploring the early universe with gravitational waves and primordial magnetic fields***” at the *Université de Genève, Département de Physique Théorique* with funds for one predoctoral employee (Antonino S. Midiri) and project costs. 2023–2027. ~ **900k CHF**.
- **2020 Summer Fellowship** from the Graduate School at the University of Colorado to support doctoral students. May–Aug. 2020. **6k USD**.
- APS **Distinguished Student** award to present my research at the APS April Meeting 2020.
- **International travel grant** by the University of Colorado to attend the PENCIL CODE user meeting in Helsinki, Finland, and the NORDITA scientific program “*Gravitational Waves from the Early Universe*” in Stockholm, Sweden. Aug. 2019. **500 USD**.

- **Visiting PhD fellowship** at the Nordic Institute for Theoretical Physics (NORDITA). Accommodation, travel, and local expenses. Aug.–Nov. 2018 and Aug.–Dec. 2019.
- **Balsells graduate fellowship** to cover graduate studies tuition fees and monthly stipend at the University of Colorado. Boulder, CO. USA. 2015–2017. ~ **120k USD**.
- ERASMUS+ **and AGAUR scholarships** to cover expenses during undergraduate exchange program at ISAE–ENSMA. Poitiers, France. 2015. **3.6k EUR**.
- **Spain Ministry of Education collaboration fellowship** for undergraduate research at the Heat Transfer department at the Polytechnic University of Catalonia (UPC). Barcelona, Spain. 2014–2015. **2k EUR**.
- **Banco Santander fellowship** to work at Termofluids. Terrassa, Spain. 2014. **1.8k EUR**.
- **Spain Ministry of Education scholarship** to cover undergraduate studies tuition fees and yearly stipend. Terrassa, Spain. 2011–2015. ~ **25k EUR**.

#### Participation in collaborative research grants (not as PI)

- **Postdoctoral researcher** of the SNSF grant 182044: “*Testing General Relativity with Cosmological Observations*” at the *Université de Genève, Département de Physique Théorique*. Sep. 2022–Feb. 2023. PI: Ruth Durrer.
  - **Postdoctoral researcher** of the ANR-19-CE31-0020 collaborative project MMUniverse: “*Opening new windows on early-universe with multi-messenger astronomy*” at the *Astroparticule et Cosmologie* (APC) Institute. Sep. 2020–Sep. 2022. PI: Dmitri Semikoz.
  - **Visiting researcher** of the Shota Rustaveli Georgian National Science Foundation grant FR18-1462: “*Reconstructing the Early Universe: Cosmic Magnetic Fields and Gravitational Waves*” at Ilia State University. Tbilisi, Georgia. 2019–2022. PI: Tina Kahniashvili.
  - **Graduate Research Assistant** of the National Science Foundation grant 1615100: “*A Comprehensive Theoretical Study of Cosmic Magnetic Fields, their Origin, Evolution, and Signatures*” at the Laboratory for Atmospheric and Space Physics (LASP), University of Colorado. Boulder (CO), USA. 2017–2020.
- PIs: Axel Brandenburg and Tina Kahniashvili.

#### Computing research grants and allocations

- Member of the allocation “Astrophysical turbulence and dynamo action” (projects SNIC 2019/2-22, 2020/3-30, 2021/3-29, 2022/3-23, NAISS 2023/3-23, 2024/3-6) of the Swedish National Infrastructure for Computing (SNIC). 2020–Jan. 2025. PI: Axel Brandenburg.
- **300k CPU hours** at the GENCI’s Jean Zay CSL supercomputer, as part of the A11 DARI allocation to the project: “*Opening new windows on Early Universe with multi-messenger astronomy*.” Nov. 2021–Oct. 2022. **PI: Alberto Roper Pol**.
- **300k CPU hours** at the GENCI’s Occigen supercomputer, as part of the A9 DARI allocation to the project: “*Opening new windows on Early Universe with multi-messenger astronomy*.” Nov. 2020–Oct. 2021. **PI: Alberto Roper Pol**.
- **200k CPU hours** at the CNES HPC facilities as a member of the LISA group at APC. 2020–2023. PI: Chiara Caprini.

#### Publications\*

Total citations: 1965 (920 excluding LISA/EPTA/LGWA collaboration papers), h-index: 16.  
Sources: ADS, Google Scholar, iNSPIRE. Updated on Oct. 14, 2025

#### Submitted:

20. **A. Roper Pol**, A. S. Midiri, “Relativistic magnetohydrodynamics in the early Universe,” arXiv:2501.05732 (2025) submitted to *Rep. Prog. Phys.*

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\*Corresponding author is marked with an asterisk when the authors list is in alphabetical order.

19. **A. Roper Pol**, A. Neronov, C. Caprini, T. Boyer, and D. Semikoz, “LISA and  $\gamma$ -ray telescopes as multi-messenger probes of a first-order cosmological phase transition,” *submitted to Astron. Astrophys.*, arXiv:2307.10744 (2023).
18. Y. He, **A. Roper Pol**, and A. Brandenburg, “Leading-order nonlinear gravitational waves from reheating magnetogeneses,” *submitted to Phys. Rev. D*, arXiv:2110.14456 (2021).

*Published:*

17. C. Caprini, R. Jinno, T. Konstandin, **A. Roper Pol**<sup>\*</sup>, H. Rubira, I. Stomberg<sup>\*</sup>, “Gravitational waves from decaying sources in strong phase transitions,” *J. High Energy Phys.* **07** (2025) 217, arXiv:2409.03651.
16. J. Harms *et al.* [LGWA Collaboration] (incl. **A. Roper Pol**), “The Lunar Gravitational-wave Antenna: Mission studies and science case,” *J. Cosmol. Astropart. Phys.* **01** (2025) 108, arXiv:2404.09181.
15. C. Caprini, R. Jinno, M. Lewicki<sup>\*</sup>, E. Madge<sup>\*</sup>, M. Merchand, G. Nardini<sup>\*</sup>, M. Pieroni<sup>\*</sup>, **A. Roper Pol**, and V. Vaskonen, “Gravitational waves from first-order phase transitions in LISA: Reconstruction pipeline and physics interpretation,” *J. Cosmol. Astropart. Phys.* **10** (2024) 020, arXiv:2403.03723.
14. [EPTA and InPTA Collaborations] (incl. **A. Roper Pol**), “The second data release from the European Pulsar Timing Array IV: Implications for massive black holes, dark matter and the early Universe,” *Astron. Astrophys.* **685** (2024) A94, arXiv:2306.16227.
13. **A. Roper Pol**, S. Procacci, C. Caprini, “Characterization of the gravitational wave spectrum from sound waves within the sound shell model,” *Phys. Rev. D* **109**, 063531 (2024), arXiv:2308.12943.
12. [LISA Cosmology Working Group] (incl. **A. Roper Pol**), “Cosmology with the Laser Interferometer Space Antenna,” *Living Rev. Relativ.* **26**, 5 (2023), arXiv:2204.05434.
11. Y. He, **A. Roper Pol**, and A. Brandenburg, “Modified propagation of gravitational waves from the early radiation era,” *J. Cosmol. Astropart. Phys.* **06** (2023) 025, arXiv:2212.06082.
10. **A. Roper Pol**, C. Caprini, A. Neronov, and D. Semikoz, “The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band,” *Phys. Rev. D* **105**, 123502 (2022), arXiv:2201.05630.
9. **A. Roper Pol**, S. Mandal, A. Brandenburg, and T. Kahnashvili, “Polarization of gravitational waves from helical MHD turbulent sources,” *J. Cosmol. Astropart. Phys.* **04** (2022) 019, arXiv:2107.05356.
8. A. Brandenburg, G. Gogoberidze, T. Kahnashvili, S. Mandal<sup>\*</sup>, **A. Roper Pol**, and N. Shenoy, “The scalar, vector, and tensor modes in gravitational wave turbulence simulations,” *Class. Quantum Grav.* **38**, 145002 (2021), arXiv:2103.01140.
7. T. Kahnashvili, A. Brandenburg, G. Gogoberidze, S. Mandal, and **A. Roper Pol**, “Circular polarization of gravitational waves from early-universe helical turbulence,” *Phys. Rev. Res.* **3**, 013193 (2021), arXiv:2011.05556.
6. A. Neronov, **A. Roper Pol**, C. Caprini, and D. Semikoz, “NANOGrav signal from MHD turbulence at the QCD phase transition in the early universe,” *Phys. Rev. D* **103**, L041302 (2021), arXiv:2009.14174.
5. **A. Roper Pol**, S. Mandal, A. Brandenburg, T. Kahnashvili, and A. Kosowsky, “Numerical simulations of gravitational waves from early-universe turbulence,” *Phys. Rev. D* **102**, 083512 (2020), arXiv:1903.08585.
4. **A. Roper Pol**, A. Brandenburg, T. Kahnashvili, A. Kosowsky, and S. Mandal, “The timestep constraint in solving the gravitational wave equations sourced by hydromagnetic turbulence,” *Geophys. Astrophys. Fluid Dyn.* **114**, 130 (2020), arXiv:1807.05479.
3. A. Brandenburg, T. Kahnashvili, S. Mandal, **A. Roper Pol**, A.G. Tevzadze, and T. Vachaspati, “The dynamo effect in decaying helical turbulence,” *Phys. Rev. Fluids* **4**, 024608 (2019), arXiv:1710.01628.

2. A. Brandenburg, A. Bracco, T. Kahniashvili, S. Mandal, **A. Roper Pol**, G.J.D. Petrie, N.K. Singh, “*E* and *B* polarizations from inhomogeneous and solar surface turbulence,” *Astrophys. J.* **870**, 87 (2019), arXiv:1807.11457.
1. A. Brandenburg, T. Kahniashvili, S. Mandal, **A. Roper Pol**, A.G. Tevzadze, and T. Vachaspati, “Evolution of hydromagnetic turbulence from the electroweak phase transition,” *Phys. Rev. D* **96**, 123538 (2017), arXiv:1711.03804.

*Proceedings:*

4. I. Stomberg, **A. Roper Pol**, “Gravitational wave spectra for cosmological phase transitions with non-linear decay of the fluid motion.” Contribution to the “2025 Gravitation: Proceedings of the 59th Rencontres de Moriond” (2025), arXiv:2508.04263.
3. **A. Roper Pol**, “Gravitational waves from MHD turbulence at the QCD phase transition as a source for Pulsar Timing Arrays.” Contribution to the “2022 Gravitation: Proceedings of the 56th Rencontres de Moriond” (2022), arXiv:2205.09261.
2. **A. Roper Pol**, “Gravitational radiation from MHD turbulence in the early universe.” Contribution to the “2021 Gravitation: Proceedings of the 55th Rencontres de Moriond,” ARISF, ISBN:979-10-96879-14-4 (2021), arXiv:2105.08287.
1. T. Kahniashvili, A. Brandenburg, A. Kosowsky, S. Mandal, and **A. Roper Pol**, “Magnetism in the Early Universe,” FM8: New Insights in Extragalactic Magnetic Fields, IAU Proceedings (2019), arXiv:1810.11876.

**Invited and contributed talks**

Total of **73** talks at international workshops, seminars, and conferences, of which **25 were invited talks** at a total of **22 different countries around the world**.

For a map with the locations of all the talks, see MyMaps. *Updated on Sep. 7, 2025.*

73. **Dec. 5, 2025.** Invited main colloquium seminar at the **Max Planck Institute for Radio Astronomy** at Bonn, Germany. “*Multi-messenger searches of primordial magnetic fields and gravitational waves.*”
72. **Sep. 5, 2025.** Invited plenary speaker at the **Invisibles 25 workshop** at CERN, Switzerland. “*Cosmological magnetic fields.*”
71. **Sep. 5, 2025.** Invited plenary speaker at the **Invisibles 25 workshop** at CERN, Switzerland. “*Cosmological magnetic fields.*”
70. **Jul. 28, 2025.** Invited speaker at the **Nordita Niels Bohr Colloquium colloquium** at Stockholm University, Sweden. “*Numerical Simulations of Early Universe Sources of Gravitational Waves.*”
69. **Jun. 24, 2025.** Invited speaker at the **4th Gravitational Wave Probes of Physics Beyond Standard Model** conference at the University of Warsaw, Poland. “*Gravitational wave spectra produced from first-order phase transitions: sound waves and MHD turbulence.*”
68. **Jun. 11, 2025.** Talk at the **CosmoFondue conference** (Jun. 10–13). University of Geneva, Switzerland. “*Gravitational waves from phase transitions.*”
67. **Jun. 4, 2025.** Talk at the 12th **LISA Cosmology Working Group Workshop** (Jun. 2–6). Estonian Academy of Sciences, Tallinn, Estonia. “*Gravitational waves from strong phase transitions and CosmoGW.*”
66. **Jan. 16, 2025.** Invited **seminar** at the Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India. “*Gravitational waves from (MHD) turbulence and magnetic fields in the early Universe.*”
65. **Jan. 6, 2025.** Invited seminar at the “**Hearing beyond the standard model with cosmic sources of Gravitational Waves**” program. International Centre for Theoretical Sciences (ICTS), Bengaluru, India. “*Gravitational waves from (MHD) turbulence and magnetic fields in the early Universe.*”

64. **Nov. 27, 2024.** Invited *seminar* at the Central European Institute for Cosmology and Fundamental Physics (CEICO). Prague, Czech Republic. “*Gravitational waves from a first-order phase transition: sound waves and turbulence.*”
63. **Nov. 19, 2024.** Invited *seminar* at the Institute for Theoretical Physics. University of Bern, Switzerland. “*Gravitational waves from a first-order phase transition: sound waves and turbulence.*”
62. **Sep. 24, 2024.** Talk at the 20th PENCIL CODE *user meeting* (Sep. 23–27). Institute of Space Science, Barcelona, Spain. “*Phase transitions in the early universe.*”
61. **Jul. 8, 2024.** Talk at the 15th *International LISA Symposium* (Jul. 8–12). University College Dublin, Ireland. “*Gravitational waves from a first-order phase transition: sound waves and turbulence.*”
60. **Jul. 1, 2024.** Talk at the *EAS Annual Meeting* (Jul. 1–5, 2024). Padova Congress, Italy. “*Using PTA to constrain primordial magnetic fields in the early universe.*”
59. **Jun. 19, 2024.** Talk at the 11th *LISA Cosmology Working Group Workshop* (Jun. 17–21). Universidade do Porto, Portugal. “*Gravitational waves from a first-order phase transition: sound waves and turbulence.*”
58. **Apr. 6, 2024.** Talk at the 58th *Rencontres de Moriond on cosmology* (Mar. 31–Apr. 7). La Thuile, Valle d’Aosta, Italy. “*Gravitational waves from first-order phase transitions.*”
57. **Mar. 19, 2024.** Talk at the conference “*Cosmology in the Alps.*” Les Diablerets, Switzerland. “*LISA, PTA and  $\gamma$ -ray telescopes as multi-messenger probes of a first-order cosmological phase transition and intergalactic magnetic fields.*”
56. **Feb. 21, 2024.** Talk at the YITP workshop “*Gravity and Cosmology.*” Yukawa Institute for Theoretical Physics (YITP), Kyoto University, Japan. “*LISA and  $\gamma$ -ray telescopes as multi-messenger probes of a first-order cosmological phase transition.*”
55. **Jan. 18, 2024.** Invited seminar on *theoretical astroparticle physics*. DESY, University of Hamburg, Germany. “*Gravitational waves and gamma-ray observatories as multi-messenger probes of first-order phase transitions and intergalactic magnetic fields.*”
54. **Dec. 14, 2023.** Invited review talk at the *Swiss CTA Observatory day* meeting (Dec. 13–14). International Space Science Institute (ISSI), World Trade Institute, University of Bern, Switzerland. “*Gravitational waves and cosmological magnetic fields.*”
53. **Dec. 5, 2023.** Invited seminar at the *IFIC seminar series*. Instituto de Física Corpuscular (IFIC), Valencia, Spain. “*Gravitational wave background produced by turbulence in the early universe.*”
52. **Oct. 16, 2023.** Talk at the *Septième Assemblée Générale* du GdR Ondes Gravitationnelles (Oct. 16–17). LUTH, Observatoire de Paris, Meudon, France. “*LISA and  $\gamma$ -ray telescopes as multi-messenger probes of a first-order cosmological phase transition.*”
51. **Oct. 12, 2023.** Talk at the “*Theory, Universe and Gravitation*” (*TUG*) meeting (Oct. 10–12). Laboratoire de Physique de l’Ecole Normale Supérieure, Paris, France. “*LISA and  $\gamma$ -ray telescopes as multi-messenger probes of a first-order cosmological phase transition.*”
50. **Sep. 29, 2023.** Invited talk at the Nordita program on “*Hydrodynamics at all scales.*” (Sep. 4–29). Nordic Institute for Theoretical Physics, Stockholm, Sweden. “*Magnetohydrodynamics of the early Universe: primordial magnetic fields, first-order phase transitions, and gravitational waves.*”
49. **Sep. 18, 2023.** Invited talk at the workshop “*Early Universe cosmology with Gravitational Waves and Primordial Black Holes.*” (Sep. 18–22). University of Warsaw, Poland. “*Gravitational waves from (M)HD turbulence (and sound waves).*”
48. **Sep. 13, 2023.** Talk at the 26th International Conference on Particle Physics and Cosmology “*COSMO23.*” (Sep. 11–15). Instituto de Física Teórica, Madrid, Spain. “*The SGWB produced by MHD turbulence in the early universe.*”
47. **Sep. 5, 2023.** Talk at the 19th PENCIL CODE *user meeting* (Sep. 4–8). University of Graz, Austria. “*Cosmology and gravitational waves with the PENCIL CODE and COSMOGW.*”

46. **Jun. 5, 2023.** Talk at 10th ***LISA Cosmology Working Group Workshop*** (June 5–9). University of Stavanger, Norway. “*The SGWB produced by MHD turbulence in the early universe.*”
45. **May 2, 2023.** Talk at the conference: “***Progress on Old and New Themes in cosmology (PONT) 2023***” (May 2–5). Palais des papes, Avignon, France. “*The SGWB produced by MHD turbulence in the early universe.*”
44. **Apr. 20, 2023.** Talk at the Spontaneous Workshop XV “***Hot topics in cosmology***” (Apr. 16–22). Institut d’Études Scientifiques de Cargèse, France. “*The SGWB produced by MHD turbulence in the early universe.*”
43. **Mar. 8, 2023.** Invited talk at the ***CERN TH Cosmo Coffee***. CERN, Geneva, Switzerland. “*The SGWB produced by MHD turbulence in the early universe.*”
42. **Nov. 22, 2022.** Invited seminar at the ***Observatory of Geneva***. Observatory of Geneva, Switzerland. “*The SGWB produced by MHD turbulence in the early universe.*”
41. **Oct. 13, 2022.** Invited seminar at the ***Geneva Cosmology and Astroparticle Physics group***. University of Geneva, Switzerland. “*The SGWB produced by MHD turbulence in the early universe.*”
40. **Jul. 27, 2022.** Online talk at the ***LISA Symposium*** (Jul. 25–29). “*The SGWB produced by MHD turbulence from cosmological phase transitions.*”
39. **Jul. 5, 2022.** Invited online talk at the International Pulsar Timing Array (IPTA) data analysis workshop meeting. “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
38. **Jul. 5, 2022.** Online talk at the 23rd International Conference on ***General Relativity and Gravitation*** (Jul. 3–8). “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
37. **Jun. 31, 2022.** Talk at the workshop “***A shot in the dark: New Challenges in Cosmology***” (Jun. 27–Jul. 1). Lorentz Center, Leiden, The Netherlands. “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
36. **Jun. 30, 2022.** Invited online talk at the Laboratoire de Physique des Plasmas, École Polytechnique. “*The SGWB produced by MHD turbulence in the early universe.*”
35. **Jun. 20, 2022.** Invited talk at the “***Cosmology*** and “***Tests of GR and modified alternatives***” working groups of the GdR Ondes Gravitationnelles. IJCLab, Orsay, France. “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
34. **Jun. 8, 2022.** Online talk at the 12th ***Iberian Gravitational Waves Meeting*** (Jun. 6–8). “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
33. **May 6 & 7, 2022.** Online talk “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency,*” and led discussion “*Developments on cosmological gravitational waves calculations with the Pencil Code*” at the 18th ***PENCIL CODE user meeting*** (May 4–10).
32. **Mar. 24, 2022.** Invited online talk at the European Pulsar Timing Array (EPTA) meeting (Mar. 23–25). “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
31. **Mar. 19, 2022.** Online talk at the Asia-Pacific School and Workshop on ***Gravitation and Cosmology*** (Mar. 19–22). “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
30. **Feb. 22, 2022.** Talk at the 12th ***Central European Relativity Seminar*** (Feb. 21–23). Hungarian Academy of Sciences, Budapest, Hungary. “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”
29. **Feb. 4, 2022.** Talk at the 56th ***Rencontres de Moriond on gravitation*** (Jan. 30–Feb. 6). La Thuile, Valle d’Aosta, Italy. “*The gravitational wave signal from primordial magnetic fields in the Pulsar Timing Array frequency band.*”

28. **Dec. 8, 2021.** Online talk at the 9th ***LISA cosmology working group workshop*** (Dec. 8–9). “*Turbulent production of polarized gravitational radiation from primordial helical magnetic fields.*”
27. **Nov. 23, 2021.** Talk at the Paris Saclay ***Astroparticle Symposium*** (Oct. 18–Nov. 26). Institut Pascal, Orsay, France. “*Turbulent production of polarized gravitational radiation from primordial helical magnetic fields.*”
26. **Oct. 11, 2021.** Talk at the 5th ***general assembly*** of the national GdR *Ondes Gravitationnelles* (Oct. 11–12). Laboratoire d’Annecy de Physique des Particules, Annecy, France. “*Turbulent production of polarized gravitational radiation from primordial helical magnetic fields.*”
25. **Sep. 15, 2021.** Online talk at the ***Spanish-Portuguese Relativity Meeting*** (EREP) (Sep. 13–16). “*Gravitational wave radiation from early universe turbulence.*”
24. **Jul. 28, 2021.** Online lecture at the CIRM research school “***Theory of Gravitation and Variation in Cosmology***” (Jul. 26–30). “*Turbulent production of gravitational radiation from primordial helical magnetic fields.*”
23. **Jul. 13, 2021.** Invited online talk at the workshop “***Gravitational Waves Probes of Physics Beyond Standard Model***” (Jul. 12–16). “*Turbulent production of gravitational radiation from cosmological phase transitions.*”
22. **May 19, 2021.** Online talk at the 17th PENCIL CODE ***user meeting*** (May 17–21). “*Recent results on gravitational waves using the Pencil Code.*”
21. **Apr. 12, 2021.** Online talk at the 21st ***BritGrav meeting*** (Apr. 12–16). “*Gravitational radiation from MHD turbulence in the early universe.*”
20. **Mar. 31, 2021.** Online talk at the ***meeting*** of the national GdR *Ondes Gravitationnelles* (Mar. 31–Apr. 1). “*Gravitational radiation from MHD turbulence in the early universe.*”
19. **Mar. 9, 2021.** Online poster presentation at the ***Rencontres de Moriond on Gravitation*** (Mar. 9–11). “*Gravitational radiation from MHD turbulence in the early universe.*”
18. **Jan. 28, 2021.** Online talk at the ***journal-club initiative en Cosmologie et Physique des AstroParticules*** (ICAP). “*Generation of gravitational waves from early-universe turbulence.*”
17. **Jan. 28, 2021.** Online talk at the cosmology working group ***meeting*** of the national GdR *Ondes Gravitationnelles*. “*Gravitational radiation from MHD turbulence in the early universe.*”
16. **Dec. 20, 2020.** Online talk at the 31st ***meeting*** of the Indian Association for General Relativity and Gravitation (IAGRG) (Dec. 19–20). “*Gravitational radiation from MHD turbulence in the early universe.*”
15. **Dec. 10, 2020.** Online talk at the conference “***Progress on Old and New Themes in Cosmology***” (PONT) (Dec. 7–11). “*Gravitational radiation from MHD turbulence in the early universe.*”
14. **Nov. 10, 2020.** Online talk at the AAPPS-DACG workshop “*Astrophysics, Cosmology, and Gravitation*” (Nov. 9–13). “*Numerical simulations of gravitational waves from early-universe turbulence.*”
13. **Oct. 14, 2020.** Invited online talk at the national colloquium “***Action Dark Energy***” (Oct. 14–15). “*Gravitational waves from magnetohydrodynamic turbulence in the early universe.*”
12. **Sep. 22, 2020.** Online talk at the APC ***theory group seminar***. “*Numerical simulations of gravitational waves from early-universe turbulence.*”
11. **Apr. 20, 2020.** Online talk at the APS April meeting “***Quarks to Cosmos***” (Apr. 18–21), sponsored by the Distinguished Student (DS) award. “*Numerical simulations of gravitational waves from early-universe turbulence.*”
10. **Feb. 7, 2020.** Talk at the 6th annual ***researchpalooza*** of the Ann and H. J. Aerospace Engineering Sciences Department at the University of Colorado. Boulder, CO, USA. “*Detection of the early-universe gravitational wave background with LISA.*”
9. **Dec. 3, 2019.** Invited talk at the Helsinki Institute of Physics seminar. University of Helsinki, Finland. “*Gravitational wave production from MHD turbulence in the early-universe.*”

8. **Aug. 26–Sep. 20, 2019.** Talks at the Nordita scientific program “*Gravitational Waves from the Early Universe*.” Nordic Institute for Theoretical Physics, Stockholm, Sweden. “*Numerical simulations of gravitational waves from early universe turbulence*.”
7. “*Gravitational wave spectra from primordial magnetohydrodynamic turbulence*.”
6. “*Subinertial range of gravitational wave spectra sourced by hydromagnetic turbulence*.”
5. **Aug. 13, 2019.** Talk at the 15th PENCIL CODE *user meeting* (Aug. 12–16). Aalto University, Helsinki, Finland. “*The timestep constraint in solving the gravitational wave equations sourced by hydromagnetic turbulence*.”
4. **Aug. 22, 2018.** Talk at the Nordita *Astrophysics seminar*. Nordic Institute for Theoretical Physics, Stockholm, Sweden. “*Gravitational wave spectra from primordial MHD turbulence*.”
3. **Jul. 8, 2018.** Poster presentation at the 12th International *LISA Symposium* (Jul. 8–13). Westin Chicago River North, Chicago, IL, USA. “*Gravitational wave signal from phase transitions due to turbulence and magnetic fields*.”
2. **Jun. 15, 2018.** Talk at the 14th PENCIL CODE *user meeting* (Jun. 11–15). University of Colorado. Boulder, CO, USA. “*Gravitational Waves in the PENCIL CODE*.”
1. **May 8, 2018.** Talk at the *Phenomenology Symposium* (May 7–9). University of Pittsburgh, PA, USA. “*Characterization of gravitational waves generated by hydromagnetic turbulence from the electroweak phase transition*.”

### Outreach talks

**Feb. 20, 2020.** Lecture for ASEN 1022 students at the University of Colorado. Boulder, CO, USA.  
 “*Quantum mechanics and orbitals: What is an orbital?, and common misconceptions*.”