

# 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

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

## Language skills:

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

## Teaching experience

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|----------------------------|---|
| <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

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|-------------------------------|---|
| <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.  $\sim$  **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.  $\sim$  **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. Kahniashvili, “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. Kahniashvili, 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. Kahniashvili, 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. Kahniashvili, 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. Kahniashvili, 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. Kahniashvili, 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’École 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 Gravitationelles. 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.”*