

# Dr. Elsa M. Teixeira | *Curriculum Vitae*

**Affiliation:** Laboratoire Univers et Particules de Montpellier (LUPM), Centre National de la Recherche Scientifique (CNRS) et Université de Montpellier, Place Eugène Bataillon, 34095 Montpellier Cédex 05, France

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**Keywords:** Dark energy ◦ Dark matter ◦ Scalar Fields ◦ Coupled Fields ◦ Bayesian Inference ◦ Cosmic Tensions ◦ Large-Scale Surveys ◦ Multi-probe Cosmology

## PERSONAL INFORMATION

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**Name:** Elsa Maria Campos Teixeira

**Nationality:** Portuguese

**Date and place of birth:** 14 September 1995, Lisbon, Portugal

**Languages:** English - Proficient ◦ Portuguese - Native Speaker ◦ Spanish - Conversational Fluent ◦ **French** - Intermediate (B2/C1 level)

## DETAILED SUMMARY

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- **Research activities (theory, phenomenology, inference).** My research focuses on theoretically-motivated models of the dark sector and their signatures in multi-probe cosmological data. I develop and test interacting dark energy/dark matter scenarios (scalar-field and effective-field-theory descriptions), to explain and diagnose current “cosmic tensions” with consistent background and perturbation modelling and robust inference.
- **Research responsibilities and outputs.** I lead and co-lead research projects from model-building to survey-ready predictions: deriving perturbation equations, implementing models in **CLASS**, building likelihood/forecast pipelines in **MONTEPYTHON**, and performing Bayesian and frequentist analyses. I contribute to major collaborations (*Euclid*) through cosmology forecasting/likelihood work and beyond- $\Lambda$ CDM modelling.
- **Scientific animation and collective responsibilities.** I take active service roles in the Euclid Consortium (**Early Career Committee**; SOC roles; event organisation), in COST actions (**COSMOVERSE**; **COSMICWISPERs**), and within my institutes (seminar organisation; scientific programme building). I also contribute as a referee for international journals.
- **Training, supervision, and teaching.** I supervise and mentor students through projects and collaborations, and I have extensive teaching and marking experience in applied mathematics and scientific computing (tutorials, computing labs, assessment).
- **Outreach, dissemination, and community initiatives.** I communicate science through public lectures, school events, and popular-science writing (including an article for National Geographic Portugal article), and contribute to community-focused initiatives including sustainability and DEI-related mentoring (diversity, equity, and inclusion).

## POSITIONS AND AFFILIATIONS

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Since 12/2023	<b>Postdoctoral Research Fellow</b> , <i>Laboratoire Univers et Particules de Montpellier (LUPM), Université de Montpellier, France</i>
ERC/CNRS	<i>Particules, Astroparticules, Cosmologie et Théorie (PACT)</i>
2019 - 2023	<b>PhD Student and Graduate Teaching Assistant</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
FCT	<i>Gravitation and Cosmology Research Group (CRAG)</i>
Since 2019	<b>Institutional Collaborator</b> , <i>Institute of Astrophysics and Space Sciences (IA), Portugal</i>
FCT	<i>Unveiling the dynamics of the Universe</i>
February - August 2019	<b>Master Research Fellow</b> , <i>Fundação para a Ciência e Tecnologia (FCT), Institute of Astrophysics and Space Sciences (IA), and Faculdade de Ciências da Universidade de Lisboa (FCUL), Portugal</i>

## EDUCATION

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2019 - 2023	<b>Doctor of Philosophy (PhD), Mathematics</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
PhD Thesis	<i>Illuminating the Dark Sector: Searching for new interactions between dark matter and dark energy</i>
PhD Supervisor	Prof. Dr. Carsten van de Bruck
2016 - 2018	<b>MSc Degree in Physics - Astrophysics and Cosmology (18/20)</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i>
MSc Thesis	<i>Models of Disformally Coupled Dark Energy (19/20)</i>
Supervisor	Dr. Nelson Nunes and Prof. Dr. Ana Nunes
2013 - 2016	<b>Undergraduate Degree in Physics (18/20)</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i>
Bachelor Thesis	<i>Lotka-Volterra Models: Theory and Applications (19/20)</i>
Supervisor	Prof. Dr. Ana Nunes

## SCIENTIFIC RESPONSIBILITIES AND RESEARCH ACTIVITIES

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My research activity focuses on theoretically motivated models of the dark sector and their confrontation with cosmological observations. I handle the full research pipeline, from model construction and perturbative analysis to numerical implementation and statistical inference.

- **Interacting dark sector models:** I develop consistent models of interacting dark energy and dark matter beyond phenomenological equation-of-state descriptions. I am responsible for deriving background and linear perturbation equations, analysing stability and consistency conditions, and identifying observational signatures. This includes conformal, disformal, and kinetic couplings, as well as scalar-field scenarios.
- **Numerical pipeline:** I implement these models in modified versions of the Einstein–Boltzmann code **CLASS** and interface them with inference frameworks (**MONTPEPYTHON**). I design Bayesian and frequentist analyses, perform parameter estimation and model comparison, and study degeneracies relevant for cosmic tensions.
- **Connection to surveys:** I ensure that theoretical developments are survey-ready by contributing to forecasting and likelihood development for next-generation experiments, particularly within large collaborations such as *Euclid*.

## SELECTED PUBLICATIONS

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- [1] Euclid Collaboration · L.W.K. Goh *et al.* (**EMT**). “EUCLID PREPARATION. COSMOLOGY LIKELIHOOD FOR OBSERVABLES IN EUCLID (CLOE). V. EXTENSIONS BEYOND THE STANDARD MODELLING OF THEORETICAL PROBES AND SYSTEMATIC EFFECTS”. *Astron. Astrophys.* (2025), [arXiv:2510.09147 \[astro-ph.CO\]](#). (I wrote the introduction and worked on the beyond  $\Lambda$ CDM implementation).
- [2] Euclid Collaboration · I.S. Albuquerque *et al.* (**EMT**). “EUCLID PREPARATION. CONSTRAINING PARAMETERISED MODELS OF MODIFICATIONS OF GRAVITY WITH THE SPECTROSCOPIC AND PHOTOMETRIC PRIMARY PROBES”. *Astron. Astrophys.* (2025), [arXiv:2506.03008 \[astro-ph.CO\]](#). (I worked on the Fisher forecasts for the EFT of DE).
- [3] Thomas Montandon, **Elsa M. Teixeira**, Adèle Poudou, and Vivian Poulin. “A FREQUENTIST VIEW ON THE TWO-BODY DECAYING DARK MATTER MODEL”. *Phys.Rev.D* **112** (2025) 4, 043521, [arXiv:2505.20193 \[astro-ph.CO\]](#).
- [4] Ruchika, William Giarè, **Elsa M. Teixeira**, and Alessandro Melchiorri. “RESILIENCE AND IMPLICATIONS OF ADIABATIC CMB COOLING”. *Phys.Dark Univ.* **49** (2025) 101999, [arXiv:2505.02909 \[astro-ph.CO\]](#).
- [5] **Elsa M. Teixeira**, William Giarè, Natalie B. Hogg, Thomas Montandon, Adèle Poudou, and Vivian Poulin. “IMPLICATIONS OF DISTANCE DUALITY VIOLATION FOR THE  $H_0$  TENSION AND EVOLVING DARK ENERGY”. *Phys.Rev.D* **112** (2025) 2, 023515, [arXiv:2504.10464 \[astro-ph.CO\]](#).
- [6] Saba Rahimy, **Elsa M. Teixeira**, and Ivonne Zavala. “DECIPHERING COUPLED SCALAR DARK SECTORS”. *Phys.Rev.D* **112** (2025) 4, 043512, [arXiv:2503.01961 \[astro-ph.CO\]](#).
- [7] **Elsa M. Teixeira**, Gaspard Poulot, Carsten van de Bruck, Eleonora Di Valentino, and Vivian Poulin. “ALLEVIATING COSMOLOGICAL TENSIONS WITH A HYBRID DARK SECTOR”. *Phys.Rev.D* **113** (2026) 2, 023514, [arXiv:2412.14139 \[astro-ph.CO\]](#).
- [8] Gaspard Poulot, **Elsa M. Teixeira**, Carsten van de Bruck, and Nelson J. Nunes. “SCALAR FIELD DARK MATTER WITH TIME-VARYING EQUATION OF STATE”. *JCAP* **11** (2025) 005, [arXiv:2404.10524 \[astro-ph.CO\]](#).
- [9] **Elsa M. Teixeira**, Richard Daniel, Noemi Frusciante, and Carsten van de Bruck. “FORECASTS ON INTERACTING DARK ENERGY WITH STANDARD SIRENS”. *Phys.Rev.D* **108** (2023) 8, 084070, [arXiv:2309.06544 \[astro-ph.CO\]](#).
- [10] Carsten van de Bruck, Gaspard Poulot, and **Elsa M. Teixeira**. “SCALAR FIELD DARK MATTER AND DARK ENERGY: A HYBRID MODEL FOR THE DARK SECTOR”. *JCAP* **07** (2023) 019, [arXiv:2211.13653 \[hep-th\]](#).
- [11] **Elsa M. Teixeira**, Bruno J. Barros, Vasco M. C. Ferreira, and Noemi Frusciante. “DISSECTING KINETICALLY COUPLED QUINTESSENCE: PHENOMENOLOGY AND OBSERVATIONAL TESTS”. *JCAP* **11** (2022) 059, [arXiv:2207.13682 \[gr-qc\]](#).
- [12] Carsten van de Bruck and **Elsa M. Teixeira**. “DARK D–BRANE COSMOLOGY: FROM BACKGROUND EVOLUTION TO COSMOLOGICAL PERTURBATIONS”. *Phys.Rev.D* **102** (2020) 10, 103503, [arXiv:2007.15414 \[gr-qc\]](#).

## AWARDS AND GRANTS

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24 - 26 November 2025	<b>Best ERC Presentation Prize</b> , <i>IRN Terascale Meeting 2025, Université de Montpellier</i>
<b>Award</b>	IRN Terascale Award for best ERC presentation
17 - 23 April 2024	<b>Short-term Scientific Missions (STSM)</b> , <i>University of Sheffield, UK</i>
<b>Grant</b>	Travel exchange grant for visits to research groups within the COSMOVERSE Cost Action (CA21136) for a scientific collaboration (2000€)
14 - 20 May 2023	<b>Short-term Scientific Missions (STSM)</b> , <i>University of Rome Sapienza, Italy</i>
<b>Grant</b>	Travel exchange grant for visits to research groups within the COSMOVERSE Cost Action (CA21136) for a scientific collaboration (2000€)
29 November - 2 December 2022	<b>Kashiwa Dark Matter Symposium 2022</b> , <i>Institute for Cosmic Ray Research, University of Tokyo</i>
<b>Award</b>	Prize for the Best Poster Presenter, sponsored by Physics, MDPI (250€)
18 - 31 October 2022	<b>Exchange Travel Grant of the European Consortium for Astroparticle Theory (EuCAPT)</b> , <i>Università di Napoli “Federico II” &amp; INFN Sezione di Napoli</i>
<b>Grant</b>	Travel exchange award to travel to another EuCAPT institution for a scientific collaboration (13/37 successful applications, 2000€)
4 - 5 April 2022	<b>Best Student Talk Prize</b> , <i>Britgrav Meeting 2022, Institute for Gravitational Research, University of Glasgow</i>
<b>Award</b>	Prize for The <b>Best Student Talk Prize</b> , sponsored by the IOP Publishing Group (£50)
October 2019 - November 2023	<b>FCT PhD Research Scholarship</b> : SFRH/BD/143231/2019 , <i>Fundação para a Ciência e Tecnologia (FCT), Portugal</i>
<b>Postgraduate Student Fellowship</b>	Successful application to the 2019 Call for PhD Scholarships by the Portuguese Ministry for Science, Technology and Higher Education. The rate of success was 41% of the total number of applicants and only 5% of the approved were to be carried at a foreign institution. Research Project: “ <i>Illuminating the dark sector: Searching for new interactions between dark matter and dark energy</i> ”. Institution: <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
February - August 2019	<b>FCT Research Scholarship</b> : BI-MESTRE- IF/00852/2015, <i>Fundação para a Ciência e Tecnologia (FCT), Institute of Astrophysics and Space Sciences (IA), and Faculdade de Ciências da Universidade de Lisboa (FCUL), Portugal</i>
<b>Research Fellowship</b>	Research Fellowship for Master degree holders in the project “IF/00852/2015”, financed by Fundação para a Ciência e a Tecnologia, I.P. FCT/MCTES, under the FCT Investigator Grant. Work Plan: Analytical and numerical research on dark energy couplings with the aim of understanding the present acceleration of the Universe.
2016/2017	<b>Academic Merit Award</b> , <i>Faculdade de Ciências, Universidade de Lisboa</i>
<b>Award</b>	Top class student of the Master degree in Physics
2015/2016	<b>Academic Merit Award</b> , <i>Faculdade de Ciências, Universidade de Lisboa</i>
<b>Award</b>	Top graduating student in Physics of the class 2013-2016

2014/2015	<b>Academic Merit Award</b> , <i>Faculdade de Ciências, Universidade de Lisboa</i>
<b>Award</b>	Top class student of the 2nd year of the Physics undergraduate
2013/2014	<b>Academic Merit Award</b> , <i>Faculdade de Ciências, Universidade de Lisboa</i>
<b>Award</b>	Top class student of the 1st year of the Physics undergraduate
2013/2014	<b>Award of the Fundação da Faculdade de Ciências</b> , <i>Universidade de Lisboa</i>
<b>Award</b>	Distinction awarded to the top 1st year students of an undergraduate degree
13 April 2012	<b>First National Philosophy Olympiads</b> , <i>Lisbon, Portugal</i>
<b>Award</b>	Bronze medal (3rd place)

## SCIENTIFIC MEMBERSHIPS

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Since 2025	Member of COST Action <b>COSMICWISPERs</b> (CA21106), Chair: Prof Alessandro Mirizzi
Since 2022	Euclid Consortium: Active member of the Theory and Joint Cosmology groups and co-lead of the project for testing the distance duality relation with <i>Euclid</i> data and lead of the project assessing cosmic tension with <i>Euclid's</i> internal probes and external data.
Since 2022	Member of COST Action <b>COSMOVERSE</b> (CA21136), Chair: Prof Jackson Levi Said
Since 2021	Participant in FCT project No. PTDC/FIS-AST/0054/2021, PI: Dr. Noemi Frusciante
2018 - 2019	Participant of FCT project No. COMPETE2020: POCI-01-0145-FEDER-028987, PI: Dr. Carlos Martins
2017 - 2019	Participant of FCT project No. IF/00852/2015, PI: Dr. Nelson Nunes
2016 - 2018	Participant of FCT project No. FCT: UID/FIS/04434/2013; COMPETE2020: POCI-01-0145-FEDER-007672, PI: Dr. José Afonso - Member of the Instituto de Astrofísica e Ciências do Espaço (IA)
2016 - 2020	Member of COST Action <b>CANTATA</b> (CA15117), Chair: Prof. Ruth Lazkoz

## TEACHING EXPERIENCE

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2022/2023	<b>Graduate Teaching Associate</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
<b>Teaching and Marking</b>	Lead demonstrator of tutorials for “AER201 MATHEMATICS FOR AEROSPACE ENGINEERS”, “MAS253 MATHEMATICS FOR ENGINEERING MODELLING”, “MAS280 MECHANICS AND FLUIDS” and “MAS254 COMPUTATIONAL AND NUMERICAL METHODS” (one semester). Assistant demonstrator of Python computer lab classes and homework marking for “MAS212 SCIENTIFIC COMPUTING AND SIMULATION” (around 96h per semester).

2022 - 2023	<b>Volunteer Tutoring and Mentoring</b> , <i>Associação Renovar a Mouraria - Tempo para Crescer (TPC), Lisboa, Portugal (online)</i>
<b>Tutoring</b>	Non-profit study support service directed to children and young people from Mouraria, with the aim of improving school results, promoting social and emotional competences, increasing motivation and digital inclusion and facilitating parents' communication with the school. Weekly online Mathematics and English tutoring (around 2h per week).
2021/2022	<b>Graduate Teaching Associate</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
<b>Teaching and Marking</b>	Lead demonstrator of tutorials and homework marking for "MAS112 VECTORS AND MECHANICS" and "MAS151 MATHEMATICS (CIVIL ENGINEERING)" (two semesters, around 96h per semester).
June - September 2021	<b>Dissertation Support Worker</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
<b>Writing Support</b>	Assist MSc Dissertation supervisors for full-time students on their MScs in Statistics. Series of lectures/discussions accompanied by one-to-one Writing Support Sessions, focusing on helping master students with the structure, clarity, prose, style and grammar of what they have written (around 8h per week).
2020/2021	<b>Graduate Teaching Assistant</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
<b>Teaching and Marking</b>	Assistant demonstrator of tutorials and homework marking for "MAS112 VECTORS AND MECHANICS" (two semesters) and "MAS140 MATHEMATICS (CHEMICAL ENGINEERING)" (around 96h of teaching and 48h of marking per semester).
2019/2020	<b>Graduate Teaching Assistant</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
<b>Teaching and Marking</b>	Assistant demonstrator of tutorials and homework marking for "MAS222 DIFFERENTIAL EQUATIONS" (around 96h per semester).
2018/2019	<b>Teaching Assistant</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i>
<b>Teaching</b>	Teaching of Physics laboratory classes (one semester) of the course entitled "LABORATORY" aimed at 2nd year students of the Health Sciences degree from the Physics Department of the Faculdade de Ciências da Universidade de Lisboa (around 180h per semester).
2017/2018	<b>Teaching Assistant (Monitor in Physics)</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i>
<b>Teaching</b>	Teaching of theoretical/exercise classes (one semester) of the course entitled "PHYSICS FOR BIOLOGISTS" aimed at 1st year students of the Biology degree from the Physics Department of the Faculdade de Ciências da Universidade de Lisboa (around 180h per semester).
2014 - 2018	<b>Tutoring</b>
<b>Tutoring</b>	Individual tutoring of Physics, Chemistry and Mathematics to middle school and high school students (around 4h per week).



## SUPERVISION AND MENTORING EXPERIENCE

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<b>Supervision</b>	Heather O'Donnell, undergraduate summer research project on applied mathematics at the <i>School of Mathematics and Statistics, University of Sheffield, UK</i> , entitled <i>Cosmology and Dynamical Systems</i> , June-September 2021
<b>Mentoring</b>	Gaspard Poulot, PhD student at the <i>School of Mathematics and Statistics, University of Sheffield, UK</i> , 2021-2025 Chiara De Leo, PhD student at the <i>University of Rome La Sapienza, Italy</i> , 2023-present Adele Poudou, PhD student at <i>LUPM, Université de Montpellier, France</i> , 2023-present Saba Rahimy, PhD student at the <i>University of Swansea, UK</i> , 2024-present Anna Chiara Ferri, PhD student at the <i>University of Rome La Sapienza, Italy</i> , 2025-present
<b>Teaching</b>	Individual tutoring (2014-2018) and volunteering tutoring+mentoring (2022-2023); Teaching Assistant for “PHYSICS FOR BIOLOGISTS” and “LABORATORY” during my MSc (2017-2019); Graduate Teaching Associate, Dissertation Support Worker and Marker for various applied mathematics courses during my PhD (2019-2023)

## ORGANISATIONAL ROLES AND OTHER ACTIVITIES

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July 2026	<b>GGI Workshop</b> , <i>Galileo Galilei Institute, Florence, Italy</i> Co-organiser of a 4-week GGI programme. Co-author of the successful scientific proposal (with W. Giarè). Responsibilities include building the scientific programme, inviting speakers, coordinating activities, and participating in the selection of participants.
2024 - Now	<b>Euclid Early Career Committee</b> , <i>Euclid Collaboration</i> Committee member since 2024; <b>Chair since 2025</b> . Responsibilities include representing and supporting early-career researchers, contributing to collaboration-level coordination (e.g. participation in selection committees), and organising ECR activities (Welcome Sessions, “Garage Day”). Member of the Scientific Organising Committee for Euclid France meetings (2024, 2025) and for the international EC meeting (EC 2025).
2024 - Now	<b>Seminar Organiser</b> , <i>LUPM, Université de Montpellier, France</i> Co-organisation of the PACT seminar series: identification and invitation of speakers, scheduling and coordination with the laboratory, local logistics, and moderation/hosting of seminar sessions.
2024 - Now	<b>Groupe Impact Environnemental du LUPM (GIEL)</b> , <i>LUPM, Université de Montpellier, France</i> Member of the LUPM working group on sustainable development. Activities include measuring and reducing the environmental impact of research activities (e.g. travel footprint, lab practices), and contributing to awareness and implementation of mitigation strategies within the laboratory, in connection with broader national initiatives (e.g. Labos1point5).

2021/2022	<b>PGR Student Seminar</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i> Organiser of monthly seminar sessions for the postgraduate students of the School of Mathematics and Statistics. Responsibilities include recruiting speakers, advertising and moderating sessions, and organising social activities.
2021/2022	<b>The University of Sheffield Student Chapter of the Society for Industrial and Applied Mathematics (SIAM) and the Institute of Mathematics and its Applications (IMA)</b> , <i>University of Sheffield, UK</i> Member of the organising committee - communication officer.
2021/2022	<b>Undergraduate Research Internship (UGRI) Scheme Committee</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i> Member of the organising committee. Responsibilities include recruiting supervisors, advertising projects, managing student applications, moderating interviews and organising social activities.
2021/2022	<b>Girl Move Academy Intercultural Buddy</b> , <i>Voluntary work program between Portugal and Mozambique</i> Emotional and practical support to one participant of the Girl Move project.
2020 -2023	<b>Hicks Green Impact</b> (sustainability accreditation scheme), <i>University of Sheffield, UK</i> Core Member of the energy and charities groups.
2019 - 2023	<b>Reading Group of the PhD students of the Gravitation and Cosmology Research Group</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i> Organisation (and participation) of a reading group aiming at stimulating discussion and improving the PhD students' skills and knowledge.
2016 - 2018 Volunteer	<b>Refood Oeiras</b> Manager and Volunteer

## SPEAKER IN CONFERENCES, WORKSHOPS AND SEMINARS

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10 - 15 May 2026	<b>37th Rencontres de Blois — Particle Physics and Cosmology</b> , <i>Château of Blois, Châteaux de la Loire, France</i> <u>Invited Speaker</u> : “Cosmic Tensions”
17 March 2026	<b>RENOIR Cosmology Seminars</b> , <i>CPPM, Marseille, France</i> <u>Invited speaker</u> : “TBD”
9 February 2026	<b>DAMPT Cosmology Seminar</b> , <i>Cambridge, UK</i> <u>Invited speaker</u> : “TBD”
27 January 2026	<b>Seminars of the IPhT Cosmology, Particle and Nuclear Physics Group</b> , <i>IPhT, Saclay, France</i> <u>Invited speaker</u> : “TBD”
20 January 2026	<b>Séminaire Univers</b> , <i>IAP, Paris, France</i> <u>Invited speaker</u> : “Cosmic tensions in the dark sector”
22 December 2025	<b>Cosmonata 2025</b> , <i>Instituto de Astrofísica e Ciências do Espaço, Faculdade de Ciências, Universidade de Lisboa, Portugal</i> <u>Invited speaker</u> : “Interacting dark sector with dark matter entropy couplings”



10 - 12 December 2025	<b>Strings and Cosmology Meeting</b> , <i>LAPTh, Annecy, France</i> <u>Keynote Invited speaker</u> : “Models of interacting dark energy”
28 November 2025	<b>IRAP Seminar</b> , <i>IRAP, Toulouse, France</i> <u>Invited speaker</u> : “Breaking the “distance duality relation” to understand cosmic tensions”
24 - 26 November 2025	<b>IRN Terascale@Montpellier</b> , <i>Université de Montpellier, Montpellier, France</i> <u>Keynote Invited Speaker</u> : “The Hubble tension: A health check of cosmological models” Member of the local organising committee (LOC)
5 - 7 November 2025	<b>Colloque national du WG Dark Energy 2025</b> , <i>Université de Montpellier, Montpellier, France</i> Conference contribution: “Cosmic tensions and interactions in the dark sector”
31 October 2025	<b>SOTU-TIFR Seminar*</b> , <i>TIFR, Mumbai, India</i> <u>Invited Speaker</u> : “Illuminating cosmic tensions with a coupled scalar dark sector”
20-22 October 2025	<b>UK HEP Forum 2025: “Wandering in the Dark”</b> , <i>The Cosener’s House, Abingdon, UK</i> <u>Keynote Invited Speaker</u> : “Solutions to tensions in the dark sector”
14 - 16 October 2025	<b>Théorie, Univers et Gravitation (TUG) 2025</b> , <i>IPhT, Saclay, France</i> Conference contribution: “Interacting dark sector with dark matter entropy couplings”
23 September 2025	<b>LPSC Seminar</b> , <i>LPSC, Grenoble, France</i> <u>Invited speaker</u> : “Illuminating cosmic tensions with a coupled scalar dark sector”
10-12 September 2025	<b>News from the dark 10</b> , <i>LUPM, Montpellier, France</i> <u>Invited Speaker</u> : “Dark energy interacting with dark matter”
9-12 September 2025	<b>3rd General Meeting of the COST Action COSMIC WISPerS</b> , <i>Sofia University “St. Kliment Ohridski”, Sofia, Bulgaria</i> <u>Keynote Invited Speaker</u> : “Testing interactions in a scalar dark sector”
24 - 26 June 2025	<b>Cosmoverse@Istanbul 2025</b> , <i>Istanbul Technical University, Istanbul, Turkey</i> Conference contribution: “The distance duality relation in light of the cosmic calibration tension”
10 - 13 June 2025	<b>CosmoFONDUE</b> , <i>École de physique, Geneva, Switzerland</i> Conference contribution: “Breaking the distance duality relation to explain cosmic tensions”
14 - 16 April 2025	<b>GDR CoPhy Episode 3</b> , <i>ENS, Paris, France</i> Conference contribution: “Breaking the “distance duality relation” to explain the Hubble tension”
5 March 2025	<b>Cosmoverse Seminar Series</b> , <i>Online Seminar Series</i> <u>Invited Speaker</u> : “Illuminating cosmic tensions with a coupled scalar dark sector”
5 - 7 February 2025	<b>Rencontres de Physique des Particules (RPP) 2025</b> , <i>LAPTh, Annecy, France</i> Conference contribution: “Constraints on an interacting dark sector”

11 December 2024	<b>La Sapienza Astrophysics Seminars</b> , <i>Università di Roma La Sapienza, Rome, Italy</i> <u>Invited Speaker</u> : “Breaking the “distance duality relation” to explain the Hubble tension”
23 December 2024	<b>Cosmonata 2024</b> , <i>Instituto de Astrofísica e Ciências do Espaço, Faculdade de Ciências, Universidade de Lisboa, Portugal</i> <u>Invited speaker</u> : “Breaking the “distance duality relation” to explain the Hubble tension”
5 - 7 November 2024	<b>Théorie, Univers et Gravitation (TUG) 2024</b> , <i>LAPTh, Annecy, France</i> Conference contribution: “Breaking the “distance duality relation” to explain the Hubble tension”
9 - 11 July 2024	<b>Cosmoverse@Krakow 2024</b> , <i>Jagiellonian University, Krakow, Poland</i> Conference contribution: “An interacting dark sector from fluid approximations”
12 June 2024	<b>Swansea Particle Physics And Cosmology Seminar</b> , <i>University of Swansea, Swansea, UK</i> <u>Invited Speaker</u> : ““Testing interactions in a scalar dark sector””
5 - 7 June 2024	<b>Meeting BEYLA-BEYond Lambda</b> , <i>Università degli Studi di Napoli Federico II, Naples, Italy</i> <u>Invited speaker</u> : “Testing interactions in a scalar dark sector”
24 April 2024	<b>CRAG Seminar</b> , <i>University of Sheffield, Sheffield, UK</i> <u>Invited Speaker</u> : “Exploring signatures of the dark sector through fluid approximations”
22 April 2024	<b>Seminars of the Jodrell Bank Centre for Astrophysics</b> , <i>University of Manchester, Manchester, UK</i> <u>Invited Speaker</u> : “Identifying Cosmological Signatures of Scalar Interactions in the Dark Sector”
30 May - 1 June 2023	<b>Cosmoverse@Lisbon 2023</b> , <i>Instituto de Astrofísica e Ciências do Espaço and Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Conference contribution: “Cosmological Tensions in a Coupled Dark Sector”
25 May 2023	<b>Research Seminars of the IA (Institute of Astrophysics and Space Sciences)</b> , <i>Instituto de Astrofísica e Ciências do Espaço and Faculdade de Ciências, Universidade de Lisboa, Portugal</i> <u>Invited Speaker</u> : “Coupled Quintessence in Flat and Closed Geometries”
16 May 2023	<b>Astrophysics Seminar of the Physics Department</b> , <i>Dipartimento di Fisica L’Università degli Studi di Roma “La Sapienza”, Italy</i> <u>Invited Speaker</u> : “Coupled Quintessence in Flat and Closed Geometries”
13-14 April 2023	<b>BritGrav23 Meeting</b> , <i>School of Mathematical Sciences, the University of Southampton</i> Conference contribution: “Constraining interactions in the dark sector”
4 April 2023	<b>Research Seminars of LUPM/Particles, Astroparticles, Cosmology: Theory</b> , <i>Laboratoire Univers et Particules de Montpellier, Montpellier, France</i> <u>Invited Speaker</u> : “Illuminating Observational Tensions in a Coupled Dark Sector”
8 March 2023	<b>London Relativity and Cosmology Seminars</b> , <i>Queen Mary University of London</i> <u>Invited Speaker</u> : “Cosmological Tensions in a Coupled Dark Sector”

7 February 2023	<b>Monthly meeting with members of the Beyla FCT research project financed (PI: Noemi Frusciante)*</b> , <i>Virtual</i> Invited Speaker: “Constraining a Kinetically Coupled Dark Sector”
20 October 2022	<b>Seminar of the Physics Department of the Università di Napoli “Federico II” &amp; INFN Sezione di Napoli</b> , <i>Naples, Italy</i> Invited Speaker: “Constraining a Kinetically Coupled Dark Sector”
7 - 12 September 2022	<b>22 Hellenic School and Workshops on Elementary Particle Physics and Gravity - Tensions in Cosmology</b> , <i>Corfu Summer Institute, Corfu, Greece</i> Invited Speaker: “Observational Tensions in Kinetically Coupled Quintessence”, Proceedings: <a href="https://pos.sissa.it/436/217">https://pos.sissa.it/436/217</a>
27 June - 1 July 2022	<b>A Shot in the Dark: New Challenges in Cosmology 2022</b> , <i>Lorentz Center, Leiden, the Netherlands</i> Conference contribution: “Power-law Kinetically Coupled Quintessence”
4 - 6 May 2022	<b>IberiCOS 2022 - 16 Iberian Cosmology meeting*</b> , <i>Institute of Space Sciences, Barcelona, Spain (hybrid)</i> Conference contribution: “Coupled Quintessence in a Closed Universe”
4 - 5 April 2022	<b>BritGrav Meeting 2022*</b> , <i>Institute for Gravitational Research, University of Glasgow, UK (virtual)</i> Conference contribution: “Coupled Quintessence in a Curved Universe” - <u>IOP Gravitational Physics Group Oral Presentation Prize</u>
29 March 2022	<b>Sapienza Astrophysics Journal Club (AJC)*</b> , <i>Sapienza University of Rome, Italy (virtual)</i> Invited speaker: “Coupled Dark Sector in a Curved Universe”
22 September 2021	<b>2 year Postgraduate Research (PGR) Students Presentations*</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK (virtual)</i> Research Seminar: “Dark Energy Interactions in a Curved Universe”
5 - 10 July 2021	<b>MG16 - Sixteen Marcel Grossmann Meeting*</b> , <i>Virtual Meeting</i> Conference contribution: “Observational Constraints of Dark D-Brane Cosmology”
29 March - 1 April 2021	<b>IberiCOS 2021 - 15 Iberian Cosmology meeting*</b> , <i>Universidade de Coimbra, Portugal (virtual)</i> Conference contribution: “Cosmological Predictions of a Disformal Dark Sector”
3 March 2021	<b>Cosmology, Relativity and Gravitation Seminar Series*</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i> Research Seminar: “Cosmological Predictions of a Disformal Dark Sector”
23 December 2020	<b>Cosmonata 2020*</b> , <i>Instituto de Astrofísica e Ciências do Espaço, Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Invited speaker: “Disformal D-Brane Cosmology”
8 November 2019	<b>School of Mathematics and Statistics PGR Student Seminar</b> , <i>University of Sheffield</i> Invited speaker: “Coupled Tachyonic Dark Energy”
15 - 17 April 2019	<b>IberiCOS 2019 - 14 Iberian Cosmology meeting</b> , <i>Universidad del País Vasco, Bilbao, Spain</i> Conference contribution: “Disformally Coupled Quintessence Models”
22 October 2018	<b>Master in Physics - Dissertation</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Research Seminar: “Models of Disformally Coupled Dark Energy”

10 - 11 September 2018	<b>ENAA 2018 - XXVIII Encontro Nacional de Astronomia e Astrofísica</b> , <i>Observatório Geofísico e Astronómico da Universidade de Coimbra, Portugal</i> Conference contribution: “Conformally Coupled Tachyonic Dark Energy”
26 - 28 March 2018	<b>IberiCOS 2018 - 13 Iberian Cosmology meeting</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Conference contribution: “Conformally Coupled Tachyonic Dark Energy”
2 February 2018	<b>Master In Physics - Internship</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Research Seminar: “Disformally Coupled Quintessence”
26 April 2017	<b>Master In Physics - Seminar</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Research Seminar: “Metric-Affine Theories of Gravity”

\* Remote talks.

## POSTER PRESENTATIONS

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29 November - 2 December 2022	<b>Kashiwa Dark Matter Symposium 2022*</b> , <i>Institute for Cosmic Ray Research, University of Tokyo</i> “Brane New World” - best poster presenter prize
27 - 28 July 2021	<b>Sheffield SIAM-IMA Applied Mathematics Conference 2021*</b> , <i>Faculty of Science, University of Sheffield, UK (online)</i> “Brane New World” - <u>prize in the PGR poster competition</u>
20 May 2021	<b>Science Graduate School Showcase*</b> , <i>Faculty of Science, University of Sheffield, UK (online)</i> “Brane New World”

## PARTICIPATION IN CONFERENCES, WORKSHOPS AND SCHOOLS

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17 - 19 November 2025	<b>Euclid France 14 (Session Chair)</b> , <i>Strasbourg, France</i> <u>Invited speaker</u> : “The Euclid Early Career Committee” Member of the scientific organising committee (SOC)
17 October 2025	<b>Journée du groupe de travail sur la cosmologie du GdR ondes gravitationnelles</b> , <i>IAP, Paris, France</i>
5 - 6 June 2025	<b>Euclid TWG Meeting 2025*</b> , <i>CAUP, Porto, Portugal</i>
25 - 27 May 2025	<b>Euclid Consortium Meeting 2025</b> , <i>Leiden, the Netherlands</i> Organisation of Garage Day for Early Career Researchers Member of the scientific organising committee (SOC)
21 - 23 May 2025	<b>Cosmoverse@Naples Workshop</b> , <i>Naples, Italy</i>
7 - 9 January 2025	<b>Euclid France 13 (Session Chair)</b> , <i>CEA, Saclay, France</i> <u>Invited speaker</u> : “The Euclid Early Career Committee” Member of the scientific organising committee (SOC)
1 - 2 October 2024	<b>Euclid TWG Meeting 2024*</b> , <i>IFT, Madrid, Spain</i>
17 - 21 June 2024	<b>Euclid Consortium Meeting 2024*</b> , <i>Rome, Italy</i>
15 - 16 April 2024	<b>Challenging the standard cosmological model</b> , <i>The Royal Society, London, UK</i>
20 - 22 June 2023	<b>UK Spectral Distortions Meeting (Session Chair)</b> , <i>The Royal Astronomical Society, Burlington House, London, UK</i>

19 - 23 June 2023	<b>Euclid Consortium Meeting 2023*</b> , <i>CPH Conference, Copenhagen, Denmark</i>
23 - 24 January 2023	<b>The Royal Society Theo Murphy meeting “Probing the quantum origin of spacetime”</b> , <i>Sedgebrook Hall, Northampton, UK</i>
19 January 2023	<b>UK Cosmology meeting 2023</b> , <i>University of Sussex, Brighton, UK</i>
22 - 24 November 2022	<b>The First International Conference on Axion Physics and Experiment (Axion 2022)*</b> , <i>Institute of Theoretical Physics, Chinese Academy of Sciences, China</i>
9 - 11 November 2022	<b>WOW Physics! (Women Of the World in Physics!)*</b> , <i>Goethe University Frankfurt, Germany</i>
4 - 15 July 2022	<b>Cosmology from Home 2022*</b> , <i>Virtual</i>
13 - 17 June 2022	<b>Online Workshop “Physics of the Early Universe”*</b> , <i>Virtual</i>
23 - 25 May 2022	<b>Second EuCAPT Annual Symposium*</b> , <i>CERN, Geneva, Switzerland</i>
16 - 17 May 2022	<b>UK Cosmology Meeting 2022</b> , <i>Newcastle University, Newcastle, UK</i>
27 - 29 April 2022	<b>Cosmological and Astrophysical Probes of New Physics 2022*</b> , <i>Princeton University, Princeton, USA</i>
25 March 2022	<b>UK-QFT X*</b> , <i>King’s College London, London, UK</i>
11 - 14 March 2022	<b>Testing Aspects of General Relativity*</b> , <i>Indian Institute of Technology, Gandhinagar, India (online)</i>
9 March 2022	<b>Aspects of Emergent Gravity*</b> , <i>Indian Institute of Technology, Gandhinagar, India</i>
14 - 18 February 2022	<b>SIGRAV International School 2022 on Cosmology: from Theory to Observation*</b> , <i>Vietri sul mare, Salerno, Italy</i>
14 - 18 February 2022	<b>Yukawa International Seminar 2022 (YKIS2022) “Gravity - The Next Generation”*</b> , <i>Yukawa Institute for Theoretical Physics, Kyoto University, Japan</i>
19 November 2021	<b>Cosmology Intertwined Mini-Workshop*</b> , <i>Snowmass CF7. Cosmic Probes of Fundamental Physics</i>
6 - 12 September 2021	<b>Fundamental Cosmology from the ELT and Space - 4 Azores School on Observational Cosmology</b> , <i>Angra do Heroísmo, Açores, Portugal</i>  Participation and presentation of a 14h30 hands-on project entitled “Assessing $H_0$ Results with respect to Systematic and Random Uncertainties” supervised by Dr. Rachael Beaton.
2 - 6 August 2021	<b>COSMO’21 - International Conference on Particle Physics and Cosmology*</b> , <i>University of Illinois, USA</i>
5 - 7 May 2021	<b>First EuCAPT Annual Symposium*</b> , <i>CERN, Geneva, Switzerland</i>
28 April 2021	<b>“Bursting the bubble: Making your research accessible beyond academia”*</b> , <i>Research Retold &amp; School of Mathematics and Statistics, University of Sheffield, UK</i>
21 - 28 April 2021	<b>Current challenges in gravitational physics workshop*</b> , <i>SISSA, Trieste, Italy</i>
12 - 16 April 2021	<b>21 BritGrav, 2021*</b> , <i>School of Mathematics and Statistics, University College Dublin, UK</i>
1 - 3 March 2021	<b>A (Hubble) tension headache - Online Workshop 2021*</b> , <i>Southampton Theory, Astrophysics and Gravity Research Centre, UK</i>
22 September 2020	<b>Virtual UK Cosmology Meeting 2020*</b> , <i>University of Sheffield, UK</i>

21 February – 11 June 2020	<b>ELT 6060 – Speaking Skills for Research Purposes</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
28 January – 11 February 2020	<b>Application Development for HPC with the C Programming Language</b> , <i>School of Mathematics and Statistics, University of Sheffield, UK</i>
8 - 9 January 2020	<b>UK Cosmo Meeting 2020</b> , <i>Lancaster University, UK</i>
15 - 19 July 2019	<b>IA Cosmology School</b> , <i>Faculdade de Ciências, Universidade de Lisboa &amp; Observatório Astronómico de Lisboa, Portugal</i>
15 - 17 October 2018	<b>IA-ON5 - Instituto de Astrofísica e Ciências do Espaço (IA)</b> , <b>5 internal workshop</b> , <i>Hotel Termas da Curia, Anadia, Portugal</i>
30 - 31 October 2017	<b>IA-ON4 - Instituto de Astrofísica e Ciências do Espaço (IA)</b> , <b>4 internal workshop</b> , <i>Calouste Gulbenkian Foundation, Lisbon, Portugal</i>
14 - 15 November 2016	<b>“1st CANTATA Cost action workshop - Cosmology and Astrophysics Network for Theoretical Advances and Training Actions”</b> , <i>Faculdade de Ciências, Universidade de Lisboa, Portugal</i> Member of the local organising committee (LOC)

\* Remote attendance.

## SERVICE AND EDITORIAL ACTIVITIES

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2025 – Now	<b>Topical Collection Editor</b> , <i>Discover Space (Springer Nature)</i> Co-editor of the topical collection “TENSIONS IN THE STANDARD MODEL OF COSMOLOGY”. Responsibilities include defining the scientific scope, coordinating the call for papers, handling submissions through peer review (editorial assessment and referee selection), and overseeing editorial decisions in coordination with the journal. <a href="#">SpringerLink collection page</a> .
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Since 2022 I’ve been a referee for Physical Review D ◦ Journal of High Energy Astrophysics ◦ Physics Letters B ◦ Physics of the Dark Universe ◦ International Journal of Modern Physics D ◦ Springer Nature Scientific Reports

## NUMERICAL SKILLS AND IT COMPETENCES

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Programming expertise: Python, C, C++, Mathematica, and bash scripting ◦ Experience with handling **large datasets** and job submission on **HPC clusters** ◦ Others: very good knowledge of L<sup>A</sup>T<sub>E</sub>X, git version control, Getdist Python package, MATLAB and experience with IDL, MPI parallel and Gnuplot ◦ Operating systems: Mac OS, Linux, Windows

## OUTREACH EXPERIENCE

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2 September 2024	<b>BUSSTEP career session</b> Invited participant in a career development session for PhD students. Presentation and discussion on postdoctoral applications and career paths, followed by a Q&A session addressing academic trajectories, mobility, and early-career challenges.
6 October 2023	<b>Space Week 2023</b> Online lecture organised by the COST Action COSMOVERSE entitled “ <b>A Cosmic Recipe: how to bake an expanding Universe</b> ” for high school students (15-18 years old) from schools all over the world
21 September 2023	<b>National Geographic Article</b> Online article for the portuguese National Geographic entitled “ <b>Digging fossils from the Big Bang: The Cosmic Microwave Background Radiation</b> ”
1 June 2023	<b>Cosmoverse@Lisbon 2023 Public Session</b> Public talk in Portuguese entitled “ <b>Cosmic Recipe: how to prepare an expanding Universe</b> ”
22 November 2022	<b>Birkdale School “Newton Society” STEM Club</b> Lecture entitled “The Dark Side of the Universe” at Birkdale School, Sheffield for 6-form students
11 February 2021	<b>Tapton School’s Science Seminar Series</b> Lecture entitled “The Dark Side of the Universe” at Tapton School, Sheffield (virtual) aimed at Post 16 students
1 June 2019	<b>Feira da Ciência - International Children’s Day</b> Promotion of the Observatório do Lago Alqueva with an interactive activity for children entitled “Catching Starlight”, explaining the basic functioning of telescopes, Museum of Natural History and Science, Lisbon, Portugal
11 February 2019	<b>IAU100 Women and Girls in Astronomy Day</b> Lecture at Escola Secundária Braamcamp Freire, Pontinha for high school students
2019	<b>CosmoEXPRESSO Project</b> Scientific education for high school students of different schools. Introduction to investigation methods in science through direct contact with research and promotion of curiosity and scientific interests
22 November 2018	<b>“Exploring the Universe” Project - “Composição e Evolução do Universo”</b> Lecture about the composition and evolution of the Universe at Escola Básica Ferreira de Castro, Ouressa for 7 grade students
29 March 2017	<b>Futurália</b> Promotion of the Master Degree in Physics in the Futurália You Fair at FIL, Lisbon



## SUMMARY OF OTHER ACTIVITIES

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Besides my research, I contribute actively to supervision, teaching, scientific animation, outreach, and group activities. I designed and supervised an undergraduate summer research project at the University of Sheffield (H. O'Donnell, 2021) on *Cosmology and Dynamical Systems*, guiding the student through analytical and numerical dynamical-systems methods for cosmological backgrounds using **MATHEMATICA** and **Python**. I also served on the committee selecting students for this scheme (**UGRI**) and on the Sheffield **SIAM-IMA** Student Chapter committees for two years. I also mentor PhD students through ongoing collaborations (including G. Poulot, C. De Leo, A.C. Ferri, A. Poudou, and S. Rahimy), and I have substantial teaching experience as a Graduate Teaching Assistant at the University of Sheffield (tutorials, computing labs, and marking in applied mathematics and scientific computing).

I also take collective responsibilities and contribute to scientific outreach activities. Within the *Euclid* Consortium, I serve on the *Euclid* Early Career Committee since 2024 and I'm the chair for the current academic year, representing and supporting early-career researchers and contributing to collaboration-level coordination, such as taking part in selection committees, organising Welcome Sessions and Garage Day events and being in the SOC on the French EC meetings in 2024 and 2025 (led by S. Escoffier from CPPM) and on the international EC meeting in 2025. While in Sheffield, I organised a weekly PhD reading group and a monthly PhD seminar session for the School of Mathematics and Statistics. At LUPM, I organise the **PACT seminar** series. I am currently co-organising a **GGI workshop in Florence** (July 2026), a 4-week programme for which I co-wrote the successful scientific proposal (with W. Giarè). I contribute to the wider community as a referee for journals including *Phys. Rev. D*, *JCAP*, *Phys. Lett. B*, and *Physics of the Dark Universe*. I maintain an **academic website** where I write about my research and list my publications, talks, teaching activities and outreach content.

Finally, I am passionate about outreach and knowledge dissemination, including public lectures (e.g. “Cosmic Recipe: how to prepare an expanding Universe” at the **COSMOVERSE** COST Action meeting, in **Portuguese**, and for a **COSMOVERSE** Space Week event, in **English**), school events and science fairs. I authored a popular-science article on the CMB for *National Geographic Portugal*. I also contribute to community initiatives, including sustainability actions (Hicks Green Impact in Sheffield and the GIEL at LUPM) and mentoring for diversity, equity, and inclusion activities, particularly focused on women in science. For example, in celebration of the IAU Women & Girls in Astronomy Day, in 2021 I made a **video** about my experience and in 2019 I gave a talk at a highschool. In 2021-2022 I was an Intercultural Buddy for the **Girl Move Academy** programme. I have given scientific outreach talks at six schools and in 2024 I led a career session at **BUSSTEP** at the University of Sheffield, advising and discussing with students about my experience as a postdoctoral researcher. Finally, I am currently preparing a popular-science book on physics and astronomy with illustrator **Inês Viegas Oliveira**, under an approved collaboration with the Portuguese publisher **Planeta Tangerina**.

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Elsa Teixeira