

# CURRICULUM VITAE

## Personal details

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**Date of CV:** August 19, 2022

## Degrees

- Sep. 2019 Ph.D. in Physics, specialising in Cosmology, at RWTH Aachen University, Germany  
Supervisor: Julien Lesgourgues  
Title: *Extended Cosmological Probes of Massive Dark Relics*  
*Magna cum laude*
- Sep. 2016 M.Sc. in Astroparticle Physics and Cosmology, RWTH Aachen University, Germany  
Title: *Cosmological Fluctuations from an Oscillating Inflaton Field*  
Graduated with honours
- Aug. 2014 B.Sc. in Physics, specialisation in Fundamental Physics  
Universitat Autònoma de Barcelona, Spain, and Universität Wien, Austria (Exchange)

## Positions

### Academic positions

- Oct. 2021 - Postdoctoral Researcher, Helsinki Institute of Physics,  
University of Helsinki, Finland
- Oct. 2019 - Sep. 2021 Postdoctoral Researcher, Service de Physique Théorique,  
Université Libre de Bruxelles, Belgium

### Previous work experience

- June 2015 - Oct. 2015 Cosmology Internship, TTK Institute, RWTH Aachen University  
Task: *created the manual for the Boltzmann code CLASS with doxygen*
- Sep. 2011 - July 2013 English Teacher for young children, Kids & Us, Sabadell, Spain

## Research supervision and leadership experience

- 2022 - Summer Research Student, J. Häkkinen, Main supervisor
- 2022 - Master Thesis, E. Vilhonen, Co-supervisor
- 2022 Bachelor Thesis, V.A. Ketola, Main supervisor
- 2018 - 2019 Master Thesis, S. Heimersheim, Co-supervisor
- 2018 - 2019 Master Thesis: M. Lucca, Co-supervisor

- 2018 - 2019 Master Thesis: D. Meinert, Co-supervisor
- 2018 - 2019 Master Thesis: A. Struocken, Co-supervisor
- 2018 Bachelor Thesis: G. Samaras, Co-supervisor
- 2018 Bachelor Thesis: M. Syed, Co-supervisor

## Teaching experience

- 2020 Developed and presented CLASS tutorial for the “TOOLS 2020” workshop (*online*)
- 2018 - 2019 Tutored for General Relativity and Cosmology, 15-week Master’s Course
- 2018 Developed and presented CLASS lectures and tutorials for the “MONTEPYTHON + CLASS Workshop 2018”, at the Kavli Institute for Cosmology, Cambridge
- 2018 Tutored for Perturbed Universe (Advanced Cosmology), 15-week Master’s Course
- 2017 - 2018 Tutored for General Relativity and Cosmology, 15-week Master’s Course
- 2017 Tutored for Intro to Theoretical Physics 1 (Classical Mechanics), Undergrad Course

## Scientific and societal contributions

### Science outreach

- Aug. 2015 - **Livestreams:** Host and founder of [Cup of Cosmology](#), a weekly livestreamed cosmology show, with over 150 episodes
- May 2022 **Public Lecture:** Invited talk for the Munich Public Observatory, Topic: *Dark Matter and Dark Energy*
- Mar. 2022 **Public Lecture:** Invited talk for the iTelescope Network (*online*), Topic: *Gravitational Waves*
- Jan. 2022 **Public Lecture:** Invited talk for the iTelescope Network (*online*), Topic: *Dark Matter and Dark Energy*
- Oct. 2021 **Livestream:** Organiser and host of Dark Matter Day panel discussion and Q&A
- Apr. 2020 **School Visits:** Multiple sessions of Skype a Scientist, connecting scientists and school children (*online*)
- 2018 - 2019 **Smartphone Game:** Advisor for DarkMaster, available on iOS and Android
- 2016 - 2019 **Livestreams:** Host and organiser of weekly institute-wide theoretical physics Q&As on Periscope for the TTK Institute, RWTH Aachen University
- Nov. 2017 **Outreach Talk:** Presenter at the NEMO Science Museum, Amsterdam, for the MuseumNight 2017
- Mar. 2017 **Science Slam:** FameLab Germany contestant (*video available*)
- 2011 - 2013 **Popular Astronomy:** co-founder of University Astronomy Group *Societat Astronòmica UAB*, and organiser of public observations, lectures, and seminars

## Organisation of scientific events

- 2022 Organiser of CFT Early-career Flash Talks Day, Helsinki (20 participants)
- 2022 Organiser of CFT Group Retreat, Helsinki (15 participants)
- 2019 Member of Local Organising Committee, *Cosmo'19* Conference, Aachen (264 participants)
- 2016 - 2019 Organiser and co-chair, *Weekly Cosmology Journal Club*, TTK Institute, Aachen
- 2018 Member of Scientific Committee and Local Organising Committee, *CosmoTools 2018* School, Aachen (41 participants)

## General contributions

- 2021 - Member of the LISA Consortium
- 2019 - Referee for journals (including JCAP, Nature Astronomy, PRD)
- 2017 - Co-developer of parameter inference code MONTEPYTHON, Contributed to code releases v3.1, v3.2, v3.3, v3.4, v3.5
- 2015 - Co-developer of Boltzmann code CLASS, Contributed to code releases v2.5, v2.7, v2.9, v3.0, v3.2
- 2019 - 2021 Member of the Belgian LiteBIRD EOI group
- 2016 - 2019 Member of the Planck collaboration
- 2016 - 2017 Member of the CORE collaboration

## Contribution to conferences, schools, and workshops

- July 2022 **Contributed Talk** at *Intriguing Inconsistencies in the Growth of Structure over Cosmic time*, Sesto, Italy
- July 2022 **Contributed Talk** at *14th International Conference on Identification of Dark Matter*, Vienna, Austria
- May 2022 **Invited Talk** at *Neutrino Cosmology Day*, Munich, Germany
- July 2021 **Plenary Talk** at *Cosmology from Home 2021 (online)*
- May 2021 **Contributed Talk** at *XIV International Workshop on the Interconnection between Particle Physics and Cosmology, PPC2021 (online)*
- Dec. 2020 **Contributed Talk** at *Progress on Old and New Themes in cosmology, PONT 2020 (online)*
- Nov. 2020 **Contributed Talk** at *Less Travelled Path of Dark Matter, LTPDM2020 (online)*
- Nov. 2020 **Contributed Talk** at *TOOLS 2020 (online)*
- June 2020 **Invited Talk** at *News from the Dark, NftD20 (online)*
- Oct. 2019 **Invited Talk** at *IRN Terascale@Bruxelles*, Brussels, Belgium

- Sep. 2019 **Contributed Talk** at *COSMO'19*, Aachen, Germany
- Aug. 2018 **Poster** at *XII International Workshop on the Interconnection between Particle Physics and Cosmology, PPC2018*, Zurich, Switzerland
- June 2018 **Contributed Talk** at *14th International Workshop on the Dark Side of the Universe, DSU18*, Annecy, France
- Dec. 2017 **Poster** at *11th TRR33 Winter School in Cosmology, Theory for Observers & Observations for Theorists*, Passo del Tonale, Italy
- Sep. 2017 **Contributed Talk** at *Fundamental physics in the cosmos: The early, the large, and the dark Universe*, Hamburg, Germany

## Invited seminars and talks

- Mar. 2022 **ETH Zurich CosmoClub**, Zurich, Switzerland (*online*)
- Mar. 2022 **UCL Cosmo/ExGal Seminar**, London, UK (*online*)
- Feb. 2022 **TIFR State of the Universe Seminar**, Mumbai, India (*online*)
- Feb. 2022 **MPA Cosmology Seminar**, Garching, Germany (*online*)
- Dec. 2021 **YouTube Dark Chatter Series** (*online*)
- Dec. 2021 **ICG Cosmology Seminar**, Portsmouth, UK (*online*)
- Nov. 2021 **Newcastle University Seminar**, Newcastle, UK (*online*)
- Apr. 2021 **Helsinki Institute of Physics Seminar**, Helsinki, Finland (*online*)
- Apr. 2021 **Stony Brook University Cosmology Seminar**, Stone Brook, USA (*online*)
- June 2020 **Vrije Universiteit Brussel Seminar Series**, Brussels, Belgium (*online*)
- May 2020 **BCTP Theory Seminar**, Bonn, Germany (*online*)
- Apr. 2020 **YouTube Cosmology Talks Series** (*online*)
- Feb. 2019 **Université Libre de Bruxelles PhysTh Seminar**, Brussels, Belgium
- Nov. 2018 **Princeton University Lunch Meeting**, Princeton, USA
- Nov. 2018 **Johns Hopkins University Seminar Series**, Baltimore, USA
- Nov. 2018 **Fermilab Seminar Series**, Chicago, USA
- Nov. 2018 **McGill University Seminar Series**, Montreal, Canada
- Nov. 2018 **Boston University Seminar Series**, Boston, USA
- Nov. 2018 **Harvard University Seminar Series**, Boston, USA
- Nov. 2018 **CCP NYU & CCA Lunch Meeting**, New York, USA
- Nov. 2018 **Columbia University Lunch Meeting**, New York, USA

## Publications

Papers marked with a dagger † indicate first author or equivalent contribution.

Papers marked with an asterisk \* are signed alphabetically.

### Scientific Articles (< 10 authors)

- (A1) † Deanna C. Hooper, Nils Schöneberg, Riccardo Murgia, Maria Archidiacono, Julien Lesgourgues, Matteo Viel, *One likelihood to bind them all: Lyman- $\alpha$  constraints on non-standard dark matter*, [arXiv: [2206.08188](#)]
- (A2) \* Quentin Decant, Jan Heisig, Deanna C. Hooper, Laura Lopez-Honorez, *Lyman- $\alpha$  constraints on freeze-in and superWIMPs*, JCAP **03** (2022) 03 041, [arXiv: [2111.09321](#)]
- (A3) \* Deanna C. Hooper, Matteo Lucca, *Hints of dark matter-neutrino interactions in Lyman- $\alpha$  data*, Phys. Rev. D **105** (2022) 10 103504, [arXiv: [2110.04024](#)]
- (A4) Nils Schöneberg, Matteo Lucca, Deanna C. Hooper, *Constraining the inflationary potential with spectral distortions*, JCAP **03** (2021) 036, [arXiv: [2010.07814](#)]
- (A5) \* Niklas Becker, Deanna C. Hooper, Felix Kahlhoefer, Julien Lesgourgues, Nils Schöneberg, *Cosmological constraints on multi-interacting dark matter*, JCAP **02** (2021) 019, [arXiv: [2010.04074](#)]
- (A6) Stefan Heimersheim, Nils Schöneberg, Deanna C. Hooper, Julien Lesgourgues, *Cannibalism hinders growth: Cannibal Dark Matter and the  $S_8$  tension*, JCAP **12** (2020) 016, [arXiv: [2008.08486](#)]
- (A7) Hao Fu, Matteo Lucca, Silvia Galli, Elia Battistelli, Deanna C. Hooper, Julien Lesgourgues, Nils Schöneberg, *Unlocking the synergy between CMB spectral distortions and anisotropies*, JCAP **12** (2021) 12 050, [arXiv: [2006.12886](#)]
- (A8) \* Iason Baldes, Quentin Decant, Deanna C. Hooper, Laura Lopez-Honorez, *Non-Cold Dark Matter from Primordial Black Hole Evaporation*, JCAP **08** (2020) 045, [arXiv: [2004.14773](#)]
- (A9) † Matteo Lucca, Deanna C. Hooper, *Shedding light on dark matter-dark energy interactions*, Phys. Rev. D **102** (2020) 12 123502, [arXiv: [2002.06127](#)]
- (A10) Matteo Lucca, Nils Schöneberg, Deanna C. Hooper, Julien Lesgourgues, Jens Chluba, *The synergy between CMB spectral distortions and anisotropies*, JCAP **02** (2020) 026, [arXiv: [1910.04619](#)]
- (A11) Nils Schöneberg, Julien Lesgourgues, Deanna C. Hooper, *The BAO+BBN take on the Hubble tension*, JCAP **10** (2019) 029, [arXiv: [1907.11594](#)]
- (A12) † Maria Archidiacono, Deanna C. Hooper, Riccardo Murgia, Sebastian Bohr, Julien Lesgourgues, Matteo Viel, *Constraining Dark Matter-Dark Radiation interactions with CMB, BAO, and Lyman- $\alpha$* , JCAP **10** (2019) 055, [arXiv: [1907.01496](#)]
- (A13) † Thejs Brinckmann, Deanna C. Hooper, Maria Archidiacono, Julien Lesgourgues, Tim Sprenger, *The promising future of a robust cosmological neutrino mass measurement*, JCAP **01** (2019) 059, [arXiv: [1808.05955](#)]

### Scientific Collaboration Articles

- (A14) \* LISA Cosmology Working Group: Pierre Auclair et al., *Cosmology with the Laser Interferometer Space Antenna*, [arXiv: [2204.05434](#)]

- (A15) \* SNOWMASS Contribution: Elcio Abdalla et al., *Cosmology intertwined: A review of the particle physics, astrophysics, and cosmology associated with the cosmological tensions and anomalies*, JHEAp **34** (2022) 49–211, [arXiv: [2203.06142](#)]
- (A16) \* EuCAPT: Rafael Alves Batista et al., *EuCAPT White Paper: Opportunities and Challenges for Theoretical Astroparticle Physics in the Next Decade*, [arXiv: [2110.10074](#)]
- (A17) \* Planck Collaboration: Yashar Akrami et al., *Planck 2018 results. X. Constraints on inflation*, Astron. Astrophys. **641** (2020) A10, [arXiv: [1807.06211](#)]
- (A18) \* CORE Collaboration: Jacques Delabrouille et al., *Exploring cosmic origins with CORE: Survey requirements and mission design*, JCAP **04** (2018) 014, [arXiv: [1706.04516](#)]
- (A19) \* CORE Collaboration: Eleonora Di Valentino et al., *Exploring cosmic origins with CORE: Cosmological parameters*, JCAP **04** (2018) 017, [arXiv: [1612.00021](#)]

### Proceedings

- (P20) Quentin Decant, Jan Heisig, Deanna C. Hooper, Laura Lopez-Honorez, *Cosmological imprints of non-thermalized dark matter*, PoS **EPS-HEP2021** (2022) 171
- (P21) Deanna C. Hooper, *Multi-interacting dark matter in the Boltzmann code CLASS*, PoS **TOOLS2020** (2021) 026

### Theses

1. D. C. Hooper, *Extended Cosmological Probes of Massive Dark Relics*, PhD Thesis at RWTH Aachen University, 2019, Supervised by J. Lesgourgues, available [online](#)