

► Thomas COLAS

IAS - Institut d'Astrophysique Spatiale
Université Paris Sud, Bâtiment 121
91405 Orsay France

+33 6 52 08 16 64
thomas.colas@universite-paris-saclay.fr

Ph.D. student in the *Cosmology Group* of the Institut d'Astrophysique Spatiale (Université Paris Saclay) and in the *Theory Group* of the Astroparticules and Cosmology laboratory (Université de Paris).

Research interests: *physics of the early universe, open quantum systems, effective field theories, gravitational wave cosmology*

Research experience

- September 2020 – : Ph.D. Student at IAS (Université Paris Saclay) and APC (Université de Paris)
Supervisors: Julien Grain, IAS (Université Paris Saclay) and Vincent Vennin, APC (Université de Paris)
 - *Field:* Primordial Cosmology
 - *Topic:* [Cosmological Open Quantum Systems](#), [Quantum aspects of the early universe](#)
 - *Skills:* EFT, QFT on curved spacetime and non-equilibrium QFT; Mathematica
- February – July 2019: Short-Term Scholar at KIPAC (SLAC) and SITP (Stanford University)
Supervisor: Leonardo Senatore, KIPAC (SLAC) and SITP (Stanford University)
 - *Field:* Theoretical and observational cosmology
 - *Topic:* [Effective Field Theory of Large Scale Structures](#)
 - *Skills:* cosmological parameters inference from LSS (SDSS/BOSS), multiprocessing for Python
- June 2018: Intern at the LPNHE – CNRS/IN2P3
Supervisor: Jean-Philippe Lenain, LPNHE (Sorbonne Université)
 - *Field:* Astroparticle Physics
 - *Topic:* Gamma-Ray Blazar Spectra using H.E.S.S. II and Fermi
 - *Skills:* work with data (H.E.S.S. II/Fermi), C++ programming and CCIN2P3 computing center
- November – December 2016: Employee at the Sociology Department of University of Tasmania
Supervisor: Adrian Franklin, University of South Australia
 - *Field:* Science and Technology Studies
 - *Topic:* [Australian nationalism and the perception of feral species](#)
 - *Skills:* Controversy Mapping and Digital Humanities

Education

- September 2017 – July 2020: Graduate Program in Theoretical Physics at the International Center for Fundamental Physics, Ecole Normale Supérieure, Paris, France
 - Master of Fundamental Physics obtained with *High Distinctions*
- September 2016 – July 2017: University of Tasmania, Hobart, Australia
 - One-Year Exchange passed with *High Distinctions*
- September 2014 – July 2017: Dual degree in Sciences and Social Sciences at Sciences Po Paris and Université Pierre et Marie Curie (Sorbonne University), Paris, France
 - Bachelor of Physics obtained with *High Distinctions*
 - Bachelor of Social Sciences obtained with *High Distinctions*

Teaching

- September 2020 – July 2022: undergraduate **lectures** and **tutorials** in physics and mathematics, 72h/year
- Spring 2021: third year **undergraduate supervision** for interns in physics and mathematics, 8 weeks

Languages

- **English:** Professional skills (IELTS: 7,5 - C1; one year in Australia; six months in the USA)
- **French:** Mother tongue
- **Spanish:** Conversational skills

Academic commitment

- 2021 – : **PhD representative** at the Physics Graduate School Council, Université Paris Saclay, France

Conferences and workshops

- Octobre 2022: "*Cosmological Master Equations*", "Théorie, Univers et Gravitation" workshop, Montpellier, France
- Juillet 2022: "*Cosmological Master Equations*", Cargese Summer School "Rethinking Beyond Standard Model", Cargese, France
- Juin 2022: "*Cosmological Master Equations*", Higgs workshop "Analogue models of gravity and fluctuation-induced phenomena", Edinburgh, United-Kingdom
- Juin 2022: "*Cosmological Master Equations*", Cosmology Working Group of the GdR "Ondes gravitationnelles", Université Paris-Saclay, France
- Mai 2022: "*Cosmological Open Quantum Systems*", QUERCY2022 workshop, Le Bastit, France
- Mai 2022: "*Cosmological Master Equations*", Spontaneous Workshop XIV, "Hot Topics in Modern Cosmology", Cargese, France
- Mai 2022: "*Cosmological Master Equations*", Quantum Field Theory in Curved Space workshop, online
- November 2021: "*The early universe as an open quantum system*", Physics Graduate School workshop, Université Paris-Saclay, France
- November 2021: "*Quantum aspects of two-field cosmology*", Paris-Portsmouth workshop, Paris, France
- February 2021: "*Can we prove the quantum origin of cosmic inhomogeneities*", Elbereth Conference, Paris, France

Invited talks

- November 2022: "*Cosmological Open Quantum Systems for the early universe*", GReCO seminar, Institut d'Astrophysique de Paris, Paris, France
- November 2022: "*Cosmological Open Quantum Systems for the early universe*", Theoretical Physics Group, Imperial College, London, United-Kingdom
- November 2022: "*Cosmological Open Quantum System*", Theory of non-equilibrium quantum matter seminar, Collège de France, Paris, France
- November 2022: "*Cosmological Open Quantum System*", High energy theory, cosmology, and quantum information science group online seminar, Syracuse University, USA
- Avril 2022: "*Cosmological Master Equations*", IPhT seminar, CEA, Université Paris-Saclay, France
- November 2021: "*Quantum aspects of two-field cosmology*", Higgs Center for Theoretical Physics seminar, Edinburgh, United-Kingdom
- November 2020: "*Open quantum systems and the generation of cosmological inhomogeneities*", LPSC Seminar, Grenoble, France