# Dr Madeleine Ginolin

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Github - Personal website

## Research experience

### Research Associate

Advisor: Prof. Kaisey Mandel

2025-Now, Institute of Astronomy & Kavli Institute for Cosmology, Cambridge, UK

- Investigating the environmental dependencies of Type Ia supernovae with Hierarchical Bayesian modelling
- Simulation-Based Inference for Type Ia supernova cosmology
- Involvement in LSST and TiDES

### Graduate student

Advisor: Dr Mickaël Rigault

2022-2025, Institut de Physique des 2 Infinis, Lyon, France

- Type Ia supernovae standardisation and its dependence on environment
- Correlations of SNe properties (luminosity, colour, stretch) with their environment
- Worked on building the ZTF SN Ia DR2 sample
- Lead of the standardisation pipeline
- Lead of the simulations of the ZTF sample and other high-redshift surveys (HSC and SNLS), used for validation of the ZTF cosmology pipeline

### Undergraduate student

Advisor: Prof. Sadegh Khochfar

2020 - 2021, Institute of Astronomy, Edinburgh, UK/Remote

- Computation of an entropy parameter describing the merging history of dark matter halos
- Correlations of this parameter with halo parameters as well as large-scale structure (voids, clusters) to understand the formation history of halos and their associated galaxies
- Use of N-body dark matter (Legacy) and hydrodynamics (IllustrisTNG) simulations, study of the impact on the time and mass resolution of the simulations

## Selected publications

*On the origin of the environmental dependence of SN Ia magnitudes: A BayeSN view of the ZTF SN Ia DR2*

**Ginolin**, Grayling, Mandel et al, MNRAS, 552, 1785 (2026) - 2 citations

*ZTF SN Ia DR2: Environmental dependencies of stretch and luminosity of a volume limited sample of 1,000 Type Ia Supernovae*

**Ginolin**, Rigault, Smith et al, A&A, 695, A140 (2025) - 54 citations

*ZTF SN Ia DR2: Colour standardisation of Type Ia Supernovae and its dependence on environment*

**Ginolin**, Rigault et al, A&A, 694, A4 (2025) - 49 citations

27 additional co-author publications (532 citations total).

## Selected talks and seminars

*Cosmology with Type Ia Supernovae*
Colloquium - Institute of Cosmology and Gravitation - February 2026, Portsmouth, UK
Colloquium - LPCA - January 2025, Clermont-Ferrand, FR

*The ZTF SN Ia DR2 and beyond*
Action Dark Energy - **Invited talk** - November 2025, Montpellier, FR

*Type Ia Supernovae standardisation with the ZTF SN Ia DR2 sample*
Cosmic Lighthouses - **Invited talk** - July 2025, Cambridge, UK
Astro Data Science seminar - KICC - November 2024, Cambridge, UK
Cosmology seminar - Astrophysics Department - November 2024, Oxford, UK

*The ZTF SN Ia DR2 sample*
Action Dark Energy - **Invited talk** - October 2024, Paris, FR

17 additional talks at various national and international conferences.

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## Teaching & Outreach

**Tonale Winter School on Cosmology** - November 2026

Lectures and tutorials on SN Ia systematics for PhD students and postdocs.

**École d'été Rodolphe Clédassou** - August 2026

Lectures on SN Ia cosmology and the Hubble constant for PhD students in cosmology.

**Undergraduate teaching** - 2022-2025 - Université Claude Bernard Lyon 1

192h of teaching *Introduction to astrophysics* (Tutorials & lectures - Second year students), *Thermodynamics* (Labs - First year students) and general physics labs with computer-based analysis (Third year students).

**Outreach**

Various talks (IoA open evenings, Astro on Tap, International Day of Women and Girls in science at UCBL, KICC/IoA Open Day) and activities (Spectroscopy workshop for kids for IWD@IoA, KICC/IoA Open Day).

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## Student mentoring

**Louis Charvill** - 2026-2027

Part III project on the discrepancies in SN Ia standardisation between DES and ZTF.

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## Community service

**LSST-DESC / Co-lead of DESC DP2 SN Ia cosmology simulations**
2026-Now

**LSST-DESC / Co-lead of the SN Ia Modelling topical team**
2026-Now

**LSST-France collaboration / Member of the EDI Committee**
2024-2026

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## Grants

**Research Fellow at Darwin College (non-stipendiary)** - October 2026

**3-year PhD grant (CDSN), ~100 k€** - September 2022

## Education

**PhD in observational cosmology / Institut de Physique des 2 Infinis & Université Claude Bernard Lyon 1** - 2022-2025, Lyon, France

Passed without corrections

**Master's degree in Astrophysics (M2 AAIS) / Observatoire de Paris** - 2021-2022, Paris, France

Très Bien mention (17.5/20, 2nd out of 42)

**Degree in fundamental physics / Ecole Normale Supérieure Paris Saclay & Université Paris Saclay** - 2019-2022, Cachan, France

## Collaborations

**Zwicky Transient Facility (ZTF)** - since March 2022

**Dark Energy Science Collaboration (DESC)/LSST** - since June 2023

**Time-Domain Extragalactic Survey (TiDES)/4MOST** - since November 2025

**Young Supernova Experiment (YSE)** - since January 2026

## Schools

**Euclid summer school**
August 2022, August 2023, August 2024

**Journées des Rencontres Jeunes Chercheurs**
October 2023

**Observing run at Observatoire de Haute-Provence**
March 2022, Saint-Michel-l'Observatoire, France

## Internships

**Institut de Physique des 2 Infinis**
March 2022 - June 2022, Lyon

Master thesis on astrophysical biases affecting Type Ia Supernovae

**Institute for Astronomy, University of Edinburgh**
October 2020 - June 2021, Edinburgh & Remote

**Laboratoire de Physique de l'ENS**
April 2020 - June 2020, Paris

Worked on microscopic electronic circuits coupled to a microwave cavity

**Institut Lumière Matière**
May 2019 - June 2019, Lyon

Worked on a project to create deterministic graphene wrinkles