Dr Madeleine Ginolin

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Research

Research Associate

Advisor: Prof. Kaisey Mandel

2025-Now, 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: 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 DR2.5 cosmology pipeline

Undergraduate student

Advisor: Prof. Sadegh Khochfar

September 2020 - June 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

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)

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

Ginolin, Rigault et al, A&A, 694, A4 (2025)

22 additional co-author publications

Talks and seminars

Cosmology with Type Ia Supernovae
Colloquium- Institute of Cosmology and Gravitation - February 2026, Portsmouth, UK

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

Type Ia Supernovae properties and standardisation with the ZTF SN Ia DR2 sample
Cosmic Lighthouses - **Invited talk** - July 2025, Cambridge, UK

Cosmology with Type Ia Supernovae and the ZTF SN Ia DR2 sample
LPCA seminar - LPCA - January 2025, Clermont-Ferrand, FR

Type Ia Supernovae standardisation with the ZTF SN Ia DR2 sample
Astro Data Science seminar - KICC - November 2024, Cambridge, UK

Type Ia supernovae standardisation for cosmology with the ZTF SN Ia DR2 sample
PATIAS-3 @ RAS - **Selected talk** - November 2024, London, UK

Type Ia Supernovae standardisation with the ZTF SN Ia DR2 sample
Cosmology seminar - Astrophysics Department - November 2024, Oxford, UK

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

Type Ia Supernovae standardisation with the ZTF Cosmo DR2 sample
Rencontres de Moriond 2024 - **Selected talk** for the Cosmology session - April 2024, La Thuile, FR

Various talks at LSST France (Annecy, Paris, Grenoble), ZTF France (Lyon, Clermont, Paris), GDR CoPhy (Lyon), ZTF Cosmology Working Group meetings (Paris, Berlin, Barcelona), summer schools (Euclid, JRJC)

Teaching & Outreach

Euclid summer school

August 2026

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

Activité Complémentaires d'Enseignement

2022-2025 - Université Claude Bernard Lyon 1

64h of annual teaching (during 3 years)

- Thermodynamics (Labs - First year students)
- Introduction to astrophysics (Tutorials & lectures - Second year students)
- General physics labs with computer-based analysis (Third year students)

Astro on Tap

July 2025, Lyon

Outreach talk for the general public on Type Ia supernova cosmology

Talk at Journées des filles et femmes en science

February 2024, Université Claude Bernard Lyon 1

Short outreach talk for undergraduates on my PhD subject

Community involvement

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

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

Grants

Research Fellow at Darwin College (non-stipendiary)

From October 2026

Contrat Doctoral Spécifique Normalien: 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

***Classes préparatoires* / Lycée du Parc**
2016-2018, Lyon

Collaborations

Zwicky Transient Facility (ZTF) - since March 2022

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

Young Supernova Experiment (YSE) - since October 2025

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

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