

Bastien Carreres | Ph.D

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Research Experience

- 2023-Present **Postdoctoral Associate**, *Duke University*, Durham, NC, USA, with Dr D. Scolnic.
Cosmology with SNe Ia, survey simulations, peculiar velocities
- 2020-2023 **PhD candidate**, *CPPM*, Marseille, with Drs D. Fouchez, B. Racine and J. E. Bautista.
Cosmology with SNe Ia, growth rate measurement with ZTF data

Education

- 2020-2023 **PhD - Astrophysics & Cosmology**, *ED 352, Aix-Marseille Université*, Marseille.
Thesis project: *Measuring the growth rate of structures with type Ia supernovae*.
- 2019-2020 **Master's degree 2nd year - Subatomic Physics and Cosmology**, *UFR PhiTEM, Université Grenoble-Alpes*, Grenoble, France.
Graduated with honors
- 2019-2020 **Magister of Physics 3rd year**, *UFR PhiTEM, Université Grenoble-Alpes*, Grenoble, France.
Graduated
- 2018-2019 **Master's degree 1st year - Physics, Fundamental Research**, *UFR PhiTEM, Université Grenoble-Alpes*, Grenoble, France.
Graduated with honors
- 2018-2019 **Magister of Physics 2nd year**, *UFR PhiTEM, Université Grenoble-Alpes*, Grenoble, France.
Graduated
- 2017-2018 **Bachelor's degree - Fundamental Physics**, *Faculté des Sciences, Université de Montpellier*, Montpellier, France.
Graduated with high honors

Publications

First Author

- [1] **B. Carreres**, D. Rosselli, J. E. Bautista, F. Feinstein, D. Fouchez, et al. "ZTF SN Ia DR2: Peculiar velocities impact on the Hubble diagram". In: *arXiv e-prints*, arXiv:2405.20409 (May 2024), arXiv:2405.20409. DOI: 10.48550/arXiv.2405.20409. arXiv: 2405.20409 [astro-ph.CO].
- [3] **Bastien Carreres**, Julian E. Bautista, Fabrice Feinstein, Dominique Fouchez, Benjamin Racine, et al. "Growth-rate measurement with type-Ia supernovae using ZTF survey simulations". In: *Astronomy & Astrophysics* 674, A197 (June 2023), A197. DOI: 10.1051/0004-6361/202346173. arXiv: 2303.01198 [astro-ph.CO].

Significative contribution

- [2] Erik R. Peterson, **Bastien Carreres**, Anthony Carr, Daniel Scolnic, Ava Bailey, et al. "The Impact from Galaxy Groups on Cosmological Measurements with Type Ia Supernovae". In: *arXiv e-prints*, arXiv:2408.14560 (Aug. 2024), arXiv:2408.14560. DOI: 10.48550/arXiv.2408.14560. arXiv: 2408.14560 [astro-ph.CO].

Schools & Internships

- August 2020-21-22 **Euclid Summer School - 2 weeks / year lectures**, *Euclid France*, Hyères, Biarritz and Banyuls.
Subject: Science of futur cosmological surveys
- March-July 2020 **Pre-Thesis Internship**, *Centre de Physique des Particules de Marseille*, Marseille.
Subject: Cosmology with type Ia supernovae
- May-June 2019 **Master's degree 1st year Internship**, *Laboratoire de Physique Subatomique et Cosmologie*, Grenoble.
Subject: Search for new particles that decay into top-antitop pair
- June 2017 **OCEVU summer school**, *Labex OCEVU*, Montpellier.
One week of seminars and one week-end of observations at the *Haute-Provence* Observatory

Responsibilities, Teaching & Outreach

- 2021-2023: **Co-organisation** of the CPPM cosmology group journal club
- 2021-2022: **Co-organisator & Volunteer** for the CPPM participation at *Fête de la Science* at Marseille Townhall
- **Graduate Teaching Assistant** (64 hours / year) during PhD at Aix-Marseille University
- **Outreach website** co-created with L. Vacher (<https://yolonomy.github.io>)
- 2016-2017: **Maths tutoring** for high-school students

Fellowship

- **PhD fellowship** Aix-Marseille University ED 352, 3 years contract
- **LSSTC Enabling Science Program Award 2021**, 5000\$ award

Talks & Posters

- Poster "Peculiar velocities with SNe Ia" at DESC Meeting 2022 at University of Chicago
- Poster "Peculiar velocities with SNe Ia" + proceedings at Rencontres de Moriond 2022
- Talk "Growth rate with Type Ia Supernovae" at LSST France 2022
- Multiple talks at ZTF France (Lyon, Marseille, Clermont-Ferrand), ZTF SN1a (Stockholm) and ZTF international (Paris) collaboration meetings.

Skills

- **Programming languages:**
 - **Python:** Advanced
 - **C/C++:** Basic
 - **HTML/CSS:** Beginner
- **Cosmology software and library:** CAMB, Class, SNANA, SNCosmo
- **Software and library:** git, VSCodium, conda, MPI, dask
- **Languages:**
 - **French:** Native
 - **English:** Fluent