

Bastien Carreres | Ph.D

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Research Experience

- 2023–Present **Postdoctoral Associate**, *Duke University*, Durham, NC, USA, with Pr 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

Teaching Experience

Academic

- 2022–2023 **Introduction to the scientific method (L2)**, Lab (12h), Aix-Marseille Université
- 2021–2023 **Methodology (L1)**, Tutorials (62h), Aix-Marseille Université
- 2020–2023 **Energy in Physics and Chemistry (L3)**, Lab (36h), Aix-Marseille Université
- 2020–2023 **Basic physics: optics & electricity (L1)**, Lab (42h), Aix-Marseille Université
- 2021–2022 **Color and Photography (L3)**, Lab (6h), Aix-Marseille Université
- 2020–2021 **Physics (L1/AMNS)**, Lab (15h), Aix-Marseille Université
- 2020–2021 **Optics (L1)**, Lab (8h), Aix-Marseille Université
- 2020–2021 **Thermodynamics (L1)**, Lab (12h), Aix-Marseille Université

Student advising

- 2024–Present **Undergrad project advising**, Duke University

Education

- 2020–2023 **PhD in Astrophysics & Cosmology**, *ED 352, Aix-Marseille Université*, Marseille, France
Thesis project: *Measuring the growth rate of structures with type Ia supernovae*.
- 2019–2020 **Master's degree in Subatomic Physics and Cosmology**, *UFR PhiTEM, Université Grenoble-Alpes*, Grenoble, France
Graduated with honors
- 2019–2020 **Magister of Physics**, *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

Selected Publications

First Author

1. **Carreres**, Rosselli, Bautista, Feinstein, Fouchez, et al. 2024. *ZTF SN Ia DR2: Peculiar velocities impact on the Hubble diagram*
In: *Astronomy & Astrophysics*. DOI: 10.1051/0004-6361/202450389
2. **Carreres**, Bautista, Feinstein, Fouchez, Racine, et al. 2023. *Growth-rate measurement with type-Ia supernovae using ZTF survey simulations*
In: *Astronomy & Astrophysics*. DOI: 10.1051/0004-6361/202346173

Significant contribution

1. Peterson, Carreres, Carr, Scolnic, Bailey, et al. 2024. *The Impact from Galaxy Groups on Cosmological Measurements with Type Ia Supernovae*
In: arXiv e-prints. DOI: 10.48550/arXiv.2408.14560

Talks & Posters

1. Oct. 2024 - **DESC Project announcement: Measurement of the growth-rate of structures using SN Ia PVs in the BBC framework** at *DESC-TD biweekly meeting*, online
2. Sept. 2023 - **Possible velocity systematic on the Hubble diagram fit** at *ZTF France*, LPC, Clermont-Ferrand, France
3. Aug. 2023 - **$f\sigma_8$ measurement with type Ia supernovae** at *DESC-TD biweekly meeting*, online
4. May 2023 - **Growth-rate measurement with type Ia supernovae** at the *Duke cosmology group's seminar*
5. Nov. 2022 - **Cosmology with the growth rate using type Ia supernovae** at *Action Dark Energy 2022*, Marseille, France
6. July 2022 - **Cosmology with the growth rate of structures using type Ia supernovae** at *DESC Summer Meeting 2022*, University of Chicago
7. May 2022 - **Measuring $f\sigma_8$ with the ZTF SN Ia sample** at *Rubin-LSST France 2022*, LAPP, Annecy, France
8. May 2022 - **Measuring $f\sigma_8$ with the ZTF SN Ia sample** at *ZTF spring meeting*, LPNHE, Paris, France
9. Feb. 2022 - **Cosmology with the growth rate of structures using type Ia supernovae + Proceedings** at *Rencontres de Moriond 2022*
10. June 2021 - **Peculiar velocities with Type Ia Supernovae** at *Rubin-LSST France 2021*, LPSC, Grenoble, France

Grants & Fellowships

- 2020–2023 **PhD fellowship - 3 year contract**, ED 352, Aix-Marseille Université
2021 **LSSTC Enabling Science Program Award**, \$5000 award

Responsibilities

- Dec. **Member of the DESC Collaboration Council**
2024–Present Elected for 2 years
2021–2023 **Co-organisator of the cosmology group journal club**, CPPM
2021–2022 **Co-organisator & Volunteer of the CPPM cosmology "Fête de la Science" stands**, Marseille Townhall

Schools & Internships

- Aug. **Euclid Summer School**, *Euclid France*
2020–2022 2 weeks / year lectures. Subject: Science of future cosmological surveys
Mar.–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

Technical Skills

Programming languages

- **Python** (Expert)
- **C/C++** (Novice)
- **HTML/CSS** (Novice)

Public codes

- SNSim: Principal Maintainer
- OpSimSummaryV2: Principal Maintainer
- flip: Co-Maintainer
- SNCosmo: Contributor
- SNANA: Contributor