

# Dr Natalia Porqueres

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## FIELDS OF EXPERTISE

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**Data analysis:** field-level inference, forward modelling, simulation-based inference, high-order statistics.

**Cosmology:** weak lensing, galaxy clustering, Lyman- $\alpha$  forest, systematics and contaminations.

**Structure formation:** reconstruction of the matter density, mass mapping, gravity models.

**High-performance computing:** inference of high-dimensional problems, MPI, OpenMP, GPUs.

## EMPLOYMENT

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- 1/12/2024–date      **Researcher (faculty)**  
CosmoStat, Department of Astrophysics, IRFU, CEA
- 1/10/2022–30/11/2024      **Beecroft fellow**  
Department of Astrophysics, University of Oxford
- 1/10/2019–30/09/2022      **Postdoctoral Research Associate**  
Imperial Centre for Inference and Cosmology (ICIC), Imperial College
- 1/09/2016–30/09/2019      **PhD student, IMPRS fellow**  
Max Planck Institute for Astrophysics and Excellence Cluster Universe
- 1/06/2015–30/08/2015      **Internship with DAAD grant**  
Max Planck Institute for Astrophysics

## EDUCATION

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- 16/09/2019      **Dr. rer. nat., Astrophysics, Ludwig Maximilian University of Munich**  
Thesis: Inferring the growth of structures from high-redshift cosmological data sets  
Magna cum laude
- 06/07/2016      **MSc in Astrophysics and Cosmology, University of Barcelona**
- 30/07/2015      **BSc in Physics, University of Barcelona**

## RESEARCH FUNDING

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- 2025      **PI of ERC Starting Grant, OCAPi (2026-2031), 1.5M €**
- 2023      **PI of DiRAC allocation (04/2023-03/2024), 4.5M core-hours**
- 2022      **PI of Beecroft fellowship, University of Oxford (10/2022-09/2025), £ 153k**
- 2022      **María Zambrano Postdoctoral Fellowship at UAB (declined)**
- 2016      **PhD student, Hertha Sponer Studentship, Excellence Cluster Universe (09/2016-10/2017), 30k €**
- 2015      **Intern student, Research Scholarship grant from German Academic Exchange Service (DAAD), Max Planck Institute for Astrophysics (6/2015-08/2015), 2k €.**

## AWARDS AND HONORS

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- 2023      **Junior Research Fellowship, Wolfson College**
- 2022      **Seal of Excellence, European Commission, Marie Skłodowska-Curie Actions.**
- 2019      **International Max Planck Research School (IMPRS) certificate.**
- 2015      **La Pedrera - Institut de Ciències del Cosmos scholarship, University of Barcelona.**

## ACADEMIC LEADERSHIP

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- Euclid Consortium: **Weak lensing Science Working Group lead** (since 2025).  
**DR1-KP-WL-7 coordinator** (High-order weak-lensing statistics, since 2024).  
**Scientific editor** in the Editorial Board (ECEB, since 2023).
- LSST-DESC: **Lead** of Bayesian Pipelines topical team (since 2024).  
**Project lead** of field-level approach (since 2022, DESC Project 306)
- International Astrostatistics Association: **Elected vice president** for development (since 2024).
- Aquila Consortium: **Lead** of weak lensing analysis (since 2020).

## SUPERVISION

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- 2025 **PhD student** Lucas Makinen (with Prof. A. Heavens), Imperial College (2021-2025).
- 2024 **MSc student** Konstantin Dukats, University of Oxford.
- 2023 **MSc student** Anya Paopiamsap (with Prof. D. Alonso), University of Oxford.
- 2023 **BSc student** Iason Saganas (with Prof. T. Enßlin), MPA.

## LECTURING

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- 2025 **ASTRODAT PhD School**, Durham: Bayesian inference (1h) and hands-on sessions (7h).
- 2025 **COLOURS PhD School**, Institut Pascal: field-level and simulation-based inference (3h).
- 2024 STFC-funded **Data Analysis PhD School**, Imperial College: 3 of 9 lectures (3h).
- 2024 **Heidelberg's Graduate Days**: PhD course (15-hour) on data analysis and the Euclid science case.
- 2023 STFC-funded **Data Analysis PhD School**, Imperial College: 3 of 8 lectures (3h).
- 2023 *Modern Astrostatistics*, Leiden University: compulsory **3 ECTS master course** (18h) with exam.  
Excellent teaching **evaluation: 8.4**.
- 2022 **Data Analysis PhD School**, Imperial College: hands-on sessions (23h) coordinator and 1h lecture.

## TUTORING

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- 2022 **Tutor** Astrophysics course (4th year students, 18h), University of Oxford.
- 2021 **Demonstrator** hands-on sessions at Data Analysis School (22h), Imperial College.
- 2020 **Demonstrator** Electromagnetism and Optics Lab (1st year students, 20h), Imperial College.

## SELECTED TALKS FROM A TOTAL OF 37 INVITED TALKS

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- 2025 "Big Data, Big Questions: The Future of Cosmological Surveys" workshop, MIAPbP (Munich)
- 2024 Euclid UK meeting, London
- 2024 "Mock Barcelona" conference, Barcelona
- 2023 "Current challenges for cosmology" conference, Bucaramanga (remote)
- 2023 "New strategies for extracting cosmology" conference, Sexten
- 2023 "Perspective on LSS" conference, Prague
- 2023 Euclid Meeting, Field-level splinter (remote)
- 2023 "Cosmology with large scale structure" conference, DIPC
- 2022 "Advances in cosmology through numerical simulations" conference, Munich
- 2022 "Weak lensing beyond 2 point" conference, Kyoto University (remote)
- 2021 Euclid Forward modelling working package
- 2020 "The Cosmic Web in the Local Universe" conference, Lorentz Center

## COMMITTEE INVOLVEMENT

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- Proposal reviewer** for DiRAC High Performance Computing facilities (2024).
- Elected member** of the Aquila Consortium Editorial Advisory Group (2024-now and 2020-2021)
- Internship admissions panel** at University of Oxford (2024).
- PhD hiring committee** at Leiden University (2024).
- Representative** of Imperial College at the London Institute of Cosmology (2021-2022)
- Referee** MNRAS, A&A, JCAP, ApJ, OJA.

## ORGANISATION OF ACADEMIC EVENTS

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- ASTRODAT workshop (SOC), University of Durham (2025)
- Euclid 3x2 meeting (LOC and SOC), Paris Observatory (2025)
- COLOURS school and workshop (SOC and LOC), Institut Pascal (2025)
- Cosmology Seminar, University of Oxford (2023-2024)
- Biannual Aquila Meeting in Oxford (2023)
- STFC-funded Data Analysis School at Imperial College (2021-2023)
- Monthly London Cosmology Discussion Meeting (LCDM) (2021-2022)
- Euclid UK meeting (2019)

## PUBLIC ENGAGEMENT

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- 2024 Co-organiser of the Astro Club at Wolfson College.
- 2023 Cosmology talk and telescope observation, Wolfson College.
- 2020 Cosmology talk at Featherstone High School (Ealing, London).
- 2018 Supervision of intern high-school students at the Max Planck Institute for Astrophysics.
- 2018 Dark energy outreach talk for high-school students at the Excellence Cluster Universe.