

Louis Legrand

Ph. D.

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Personal Information

date of birth 05 August 1993
nationality French

Current position

Nov 2020–present **PostDoc at the University of Geneva**, Department of theoretical physics, within SNSF Eccellenza Professorial Fellowship (No. 186879).

Previous position

2017–2020 **PhD in Astronomy and Astrophysics**
Université Paris-Saclay, Institut d'Astrophysique Spatiale
○ Thesis title Large surveys: from galaxy evolution to cosmological probes
○ Supervisors Marian Douspis and Nabila Aghanim
○ Graduated with honours and congratulations of the jury (*avec les félicitations du jury*)

Grant and awards

Feb. 2020 Conference grant to participate to Cosmic Flows 2020
2017-2020 Doctoral grant provided by the Centre National d'Etudes Spatiales (CNES)

Education

2016–2017 Master's Degree in Astronomy and Astrophysics
Université Paul Sabatier, Toulouse
2013–2017 Engineering degree
École polytechnique, Palaiseau
2011–2013 Classes préparatoires aux grandes écoles
Lycée Louis-le-Grand, Paris

Collaboration Membership

2020–present **CMB-S4 collaboration**
○ Map to other statistics working group, involved in the CMB lensing spectrum estimation
○ Low-ell BB working group, involved in the delensing of the CMB maps
2017–present **Euclid collaboration**
○ CMB cross-correlations working group: involved in the “Forecasts” work package, in the “Likelihood” work package and in the “CMB lensing covariance” work package
○ Galaxy clustering working group: involved in the “Additional probes” work package and in the “Super sample covariance” key project
2016–2020 **COSMOS collaboration**
○ Involved in the measurement of the stellar to halo mass ratio

Experiences

- Nov–Dec 2018 Visiting student at CEFCA, Teruel, Spain
In collaboration with Carlos Hernandez-Monteagudo
Development and forecasts for a new cosmological probe, the angular redshift fluctuations
- Apr–Sep 2017 Master thesis at the Institut d'Astrophysique de Paris
Supervisor: Henry Joy McCracken
Measurement of the stellar to halo mass ratio of galaxies in COSMOS
- Mar–Jul 2016 Internship at the Institut d'Astrophysique Spatiale
Supervisor: Hervé Dole
Study of high redshift galaxy clusters and predictions for JWST and Euclid

Invited talks and seminars

- July 2022 International workshop: Key challenges in galaxy and CMB lensing, held in Centre for Theoretical Cosmology, Cambridge UK, *Iterative CMB lensing power spectrum estimation*, invited talk
- May 2022 Institute for Particle Physics and Astrophysics, ETH-Zurich, Switzerland, *Next generation of CMB lensing estimation*, invited seminar
- Mar. 2022 Institut d'Astrophysique Spatiale, University Paris-Saclay, Orsay, France, *CMB lensing with deep polarization surveys*, invited seminar
- Oct 2021 Scuola internazionale superiore di studi avanzati (SISSA), Trieste, Italy, *CMB lensing power spectrum with deep polarisation experiments*, invited seminar

Contributed talks and posters

- Jul. 2022 Cosmology from home 2022, *CMB lensing with next generation surveys*, talk
- May 2022 From Planck to the future of CMB, held in Ferrara, Italy, *CMB lensing power spectrum with deep surveys*, poster
- May. 2022 CMB-S4 consortium meeting, *CMB lensing spectrum for next generation surveys*, flashtalk
- Feb. 2022 56th Recontres de Morion, held in La Thuile, Italy *Next generation CMB lensing power spectrum*, poster
- Jul. 2021 Cosmology from home 2021, *Optimal CMB lensing power spectrum estimation*, flashtalk
- Jun 2021 Euclid additional probes working group, held in remote, *Angular redshift fluctuations: A new statistic to probe the dark sector*, talk
- Apr. 2021 Réunion Euclid-France Clustering, *Angular redshift fluctuations: A new statistic to probe the dark sector*, talk
- Mar. 2021 CMB-S4 consortium meeting, *Optimal CMB lensing power spectrum estimation*, flashtalk
- Nov. 2020 9th Euclid France Symposium, *Probing the dark sector with Angular Redshift Fluctuations*, talk
- Feb. 2020 Cosmic Flows conference, held in Stellenbosch Institute for Advanced Study, South Africa, *Angular redshift fluctuations and CMB lensing*, talk
- Jun. 2019 The golden age of cosmology from Planck to Euclid, held in Institut d'Astrophysique de Paris, France, *Angular redshift fluctuations and CMB lensing*, poster
- May 2019 COSMOS collaboration annual meeting 2019, held in Flatiron Institute, New York, *The stellar to halo mass relationship in the COSMOS field*, talk
- Feb. 2019 Conférence Elbereth 2019, held in IAP, Paris, *Euclid and CMB lensing*, talk
- Nov. 2018 7th Euclid France Symposium, held in Observatoire de la Côte d'Azur, Nice, France, *Cross correlations between CMB lensing and Euclid*, talk
- Oct. 2018 Journées Nationales du PNCG 2018, held in Institut d'Astrophysique de Paris, France, *Stellar to halo mass relationship*, talk

- Apr. 2018 Statistical challenges for large-scale structures, held in Oxford, *Stellar to halo mass relationship*, talk
- Nov. 2017 Conférence Elbereth 2017, held in Institut d'Astrophysique de Paris, France, *Dark matter and evolution of galaxies*, talk

Supervised student

- Feb.–June 2022 Samuel Simko, Bachelor degree, *Deep learning techniques to estimate the mass of galaxy clusters through CMB lensing*

Teaching and outreach experience

- June 2022 International Euclid advanced school, held in Les Houches, France, *Cross correlations between Euclid and CMB lensing*, lecturer, 1.5 hours
- Sep 2021–present Outreach science talks at University of Geneva for school students (from 6 to 18 years old), 2 hours/week
- 2020–2021 Teaching assistant *Mathematical methods for physicists*, for bachelor of physics at the University of Geneva, 2 hours/week
- Dec 2019 Teaching assistant *Data analysis*, for Master of physics at Université Paris Saclay 15 hours
- 2017–2020 Outreach science talks at the *Palais de la Découverte* museum in Paris, 62 hours/year

Academic service

- 2021–present Member of the Euclid Early Career Committee, involved in the organization of
- Early career workshop of the Euclid consortium meeting 2022
 - Flashtalk sessions of the Euclid consortium meeting 2022
 - Bi-annual Question/Answering sessions with the Euclid board
- 2019 Co-organizer of the PhD students day of the Institut d'Astrophysique Spatiale (IAS), held on Dec. 9 2019
- 2019 Member of the LOC for the 8th Euclid France Symposium, held at IAS, Nov. 27-29 2019
- 2018–2019 Co-organizer of monthly PhD student seminars at IAS
- Mar. 2018 Co-organizer of a career meeting for PhD students in Astronomy and Astrophysics, held in Paris

Institutional activities

- 2018–2020 Representative of the PhD students of the Institut d'Astrophysique Spatiale

Languages

- French Native
- English Fluent
- Italian Advanced level
- Portuguese Beginner level