

Louis Legrand

Curriculum Vitae

Institut d'Astrophysique Spatiale

Université Paris-Sud, bâtiment 121

91405 Orsay FRANCE

✉ louis.legrand@u-psud.fr

📄 www.ias.u-psud.fr/pperso/llegrand/

www.orcid.org/0000-0003-0610-5252

Current position

since Sep. 2017 **PhD student**, *Institut d'Astrophysique Spatiale*, Orsay.
Title: Cross correlations between cosmic microwave background and large galaxy surveys.
Supervised by Marian Douspis and Nabila Aghanim.

Education

2016–2017 **Master's Degree in Astronomy and Astrophysics**, *Université Paul Sabatier*, Toulouse.
2016–2017 **Diplôme d'ingénieur (engineering degree)**, *ISAE-SUPAERO*, Toulouse.
2013–2016 **Diplôme d'ingénieur (engineering degree)**, *École polytechnique*, Palaiseau.
2011–2013 **Classes préparatoires aux grandes écoles**, *Lycée Louis-le-Grand*, Paris.

Grants and Fellowships

2019 Short listed in the selection process for the Lopez-Loreta grant (1 M€/5 years)
2017 CNES PhD fellowship (2017-2020)

Experience

Nov–Dec 2018 **Long term visit**, *CEFCA*, Teruel, Spain.
Collaboration with Carlos Hernandez-Monteagudo.
Development and forecasts for a new cosmological probe.
Apr–Sep 2017 **Master thesis**, *Institut d'Astrophysique de Paris*.
Supervised by Henry Joy McCracken.
Measurement of the stellar to halo mass ratio of galaxies in COSMOS.
Mar–Jul 2016 **Internship**, *Institut d'Astrophysique Spatiale*, Orsay.
Supervised by Hervé Dole.
Study of high redshift galaxy clusters and predictions for JWST and Euclid.
Jun–Aug 2015 **Internship**, *Thales*, Singapour.
Development (phase 0) of a satellite for maritime surveillance
2013–2014 **Internship**, *Marine Nationale*, Brest.
Officer on a french military frigate.

Collaboration Membership

2017–Present Member of the Euclid collaboration, in the CMB cross-correlations working group
2017–Present Close collaborator of the ByoPiC ERC team
2016–Present Member of the COSMOS team

Contributed talks and posters

Jun. 2019 Cosmogold conference, IAP, Paris, poster
Jun. 2019 ByoPiC workshop, Hossegor, talk
May 2019 COSMOS annual meeting 2019, Flatiron Institute, New York, talk

Mar. 2019 Euclid CMB cross-correlations meeting 2019, IAS, Orsay, talk
Feb. 2019 Conférence Elbereth 2019, IAP, Paris, talk
Nov. 2018 Euclid France Symposium 2018, Obs. de la Côte d'Azur, Nice, talk
Oct. 2018 Journées Nationales du PNCG 2018, IAP, Paris, talk
May 2018 ByoPiC workshop, La Valette, Malta, talk
Apr. 2018 Statistical challenges for large-scale structures, Oxford, talk
Nov. 2017 Conférence Elbereth 2017, IAP, Paris, talk

Publications

- 1 Legrand L., McCracken, H.J., Davidzon I., Ilbert O., Coupon J., Aghanim N. Douspis M., Capak P. L., Le Fèvre O., Milvang-Jensen B, *The COSMOS-UltraVISTA stellar-to-halo mass relationship: New insights on galaxy formation efficiency out to $z \sim 5$* , MNRAS, 486(4):5468-5481, July 2019.
- 2 Legrand L., Hernandez-Monteagudo C., *Combining angular redshift fluctuations and CMB lensing*, 2020, *in prep.*
- 3 Legrand L., Douspis M., *Calibrations of cluster masses with CMB lensing*, 2020, *in prep.*
- 4 Legrand L., Taylor J., Scoville N. *Evolution of the gas to halo mass relation*, 2020, *in prep.*
- 5 Euclid Collaboration, including Legrand L., *et al.*, *Forecasting constraints from the combination of Euclid and CMB probes.*, 2020, *in prep.*

Additional experiences

2019 Teaching (M1 general physics at Université Paris Saclay).
Practical work on Data Analysis. *48 hours*
2017-2020 Science diffusion. Monthly scientific talks for the general public at the *Palais de la Découverte* museum. *62 hours/year*
2019 Member of the LOC for the Euclid France Symposium 2019.
2019 Organizer of the PhD day 2019 at IAS.
since 2018 Organizer of the monthly PhD seminars at IAS.
since 2018 Representative of the PhD students at IAS.
2018 Organizer of a meeting with former PhD students of the doctoral school.

Languages

French Mother tongue
English Fluent
Italian Advanced level

Numerical skills

Languages Python, Matlab, C/C++
Tools Git, Mercurial, Jupyter notebooks, Tensorflow, Keras
Codes Class, Quicklens, Emcee, Colossus

Referees contacts

PhD advisor **Marian Douspis**, marian.douspis@ias.u-psud.fr, IAS Orsay.
Master advisor **Henry Joy McCracken**, hjmcc@iap.fr, IAP Paris.
Collaborator **Carlos Hernandez-Monteagudo**, chm@cefca.es, CEFCA Teruel.