Louis Legrand

Ph. D.

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Current position

July 2024–present **Postdoctoral fellow at the University of Cambridge**, Department of Applied Mathematics and Theoretical Physics, with a Postdoc Mobility fellowship from the Swiss National Science Foundation (N. P500PT 217950)

Previous position

Nov 2023–June 2024 **Postdoctoral fellow at the ICTP-SAIFR**, Institute of Fundamental Physics, State University of São Paulo, within a FAPESP fellowship (N. 2023/08560-7)

Nov 2020–Oct 2023 **Postdoctoral researcher at the University of Geneva**, Department of Theoretical Physics, within SNSF Eccellenza Professorial Fellowship of Julien Carron (N. 186879)

Education

2017–2020 **Université Paris-Saclay**, Institut d'Astrophysique Spatiale
PhD in Astronomy and Astrophysics
- 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*)

2016–2017 **Université Paul Sabatier**, Master's Degree in Astronomy and Astrophysics

2016–2017 **ISAE-SUPAERO**, Toulouse, France, *Engineering degree*

2013–2016 **École polytechnique**, Palaiseau, France, *Engineering degree*

2011–2013 Lycée Louis-le-Grand, Paris, Classes préparatoires aux grandes écoles

Experiences

Nov–Dec 2018 Visiting student at CEFCA, Teruel, Spain
Supervisor: Carlos Hernandez-Monteagudo
Development and forecasts for a new cosmological statistics: 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: Pr. Hervé Dole
Study of high redshift galaxy clusters and predictions for JWST and Euclid

Collaboration Membership

2017–present **Euclid collaboration**
- Tracking of total contributions (full time equivalent): 2.7 years
- Co-lead of the CMB lensing cross-correlations Key Project (DR1-KP-CMBX-3)
- Former chair, now co-chair of the Early Career Committee (member since 2021)
- Co-chair of the Early Career Committee (member since 2021)

2020–present **CMB-S4 collaboration**
- Map to other statistics working group, involved in the CMB lensing spectrum estimation
- Low-ℓ BB working group, delensing of the CMB

2016–2020 **COSMOS collaboration**

Grants and Fellowships

Jul. 2023 Postdoc.Mobility grant from the Swiss National Science Fundation: two years research project hosted in the DAMTP, University of Cambridge, starting in July 2024. Project name: *DRILR, Data Ready Iterative Lensing Reconstruction* (128'600 CHF)

Feb. 2023 FAPESP Postdoctoral fellowship at the ICTP-South American Institute of Fundamental Research

Aug. 2022 Grant from the Academic Society of Geneva, to attend the COSMOS'22 conference and a three weeks visit at the Federal University of Rio de Janeiro (1370 CHF)

Feb. 2020 Conference grant to participate to Cosmic Flows 2020 (200 EUR)

2017-2020 Doctoral grant provided by the Centre National d'Etudes Spatiales (45000 EUR)

Supervised students

Nov. 2022 – Mar. 2023 Angelo Ferrari, visiting PhD student, *Development of the Euclid and CMB lensing joint likelihood*

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

Invited talks and seminars

Mar. 2025 Royal Obsertory of Edinburgh, *Optimal and robust CMB lensing power spectrum*, invited talk

Feb. 2025 Institut d'Astrophysique Spatiale, Orsay, *Optimal and robust CMB lensing power spectrum*, invited seminar

Jun. 2024 Instituto de Astronomia, Geofísica e Ciências Atmosféricas, University of São Paulo, Brasil, *Cosmology with gravitational lensing of the CMB*, invited seminar

Apr. 2024 Principia institute, São Paulo, Brasil, São Paulo Research Group meetings in Astro and Cosmo `https://www.ictp-saifr.org/astrocosmomeeting/`

Mar. 2024 Observatoire de la Cote d'Azur, Laboratoire Lagrange, Nice, France, *Cosmology with gravitational lensing of the CMB*, invited seminar

Mar. 2024 ICTP-SAIFR, IFT UNESP, Sao Paulo, Brasil, *Cosmology with gravitational lensing of the CMB*, invited colloquium

Feb. 2024 Observatorio Nacional, Rio de Janeiro, Brasil, *Cosmology with gravitational lensing of the CMB*, invited seminar

Jan. 2024 University of Heidelberg, Germany, *Cosmology with gravitational lensing of the CMB*, invited seminar

Dec. 2023 CBPF, Rio de Janeiro, Brasil, *Cosmology with gravitational lensing of the CMB*, invited seminar

Oct. 2023 University of São Paulo, Brasil, *Cosmology with gravitational lensing of the CMB*, invited colloquium

Sep. 2022 Federal University of Rio de Janeiro, Brasil, *Next generation of CMB lensing estimation*, invited seminar

July 2022 International workshop: Key challenges in galaxy and CMB lensing, 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

Feb. 2025 Cosmology on the Steep Rise, Sexten, *Optimal and robust CMB lensing power spectrum*, talk

Dec. 2024 CMB France meeting, Institut Henry Poincaré, *Optimal and robust CMB lensing power spectrum*, talk

Dec. 2024 Euclid UK meeting, Royal Astronomical Society, *Introducing the Euclid Early Career Committee*, talk

Oct. 2024 Cambridge-LMU meeting 2024, University of Cambridge, *Optimal CMB lensing reconstruction*, talk

Sep. 2024 New Physics from Old Light: Illuminating the Universe with CMB Secondaries, University of Cambridge *CMB lensing power spectrum with CMB-S4*, talk

Apr. 2024 58th Rencontres de Moriond, La Thuile, Italy, *Optimal lensing power spectrum*, talk

Aug. 2022 COSMO'2022, Rio de Jaineiro, Brazil, *CMB lensing with next generation surveys*, talk

Jul. 2022 Key Challenges in Galaxy and CMB Lensing, Centre for Theoretical Cosmology, DAMTP, Cambridge, UK

Jul. 2022 Cosmology from home 2022, online, *CMB lensing with next generation surveys*, talk

May 2022 From Planck to the future of CMB, 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 de Moriond, La Thuile, Italy *Next generation CMB lensing power spectrum*, poster

Jul. 2021 Cosmology from home 2021, *Optimal CMB lensing power spectrum estimation*, flashtalk

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, 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, Institut d'Astrophysique de Paris, France, *Angular redshift fluctuations and CMB lensing*, poster

May 2019 COSMOS collaboration annual meeting 2019, Flatiron Institute, New York, *The stellar to halo mass relationship in the COSMOS field*, talk

Feb. 2019 Conférence Elbereth 2019, Institut d'Astrophysique de Paris, *Euclid and CMB lensing*, talk

Nov. 2018 7th Euclid France Symposium, Observatoire de la Côte d'Azur, Nice, France, *Cross correlations between CMB lensing and Euclid*, talk

Oct. 2018 Journées Nationales du PNCG 2018, Institut d'Astrophysique de Paris, France, *Stellar to halo mass relationship*, talk

Apr. 2018 Statistical challenges for large-scale structures, Oxford, *Stellar to halo mass relationship*, talk

Nov. 2017 Conférence Elbereth 2017, Institut d'Astrophysique de Paris, France, *Dark matter and evolution of galaxies*, talk

Teaching

2022–2023 Teaching assistant *Thermodynamics*, bachelor of physics, University of Geneva, *2 hours/week for 1 semester*

June 2022 International Euclid advanced school, Les Houches, France, *Cross correlations between Euclid and CMB lensing*, lecturer, *1.5 hours total*

2020–2021 Teaching assistant *Mathematical methods for physicists*, bachelor of physics, University of Geneva, *2 hours/week for 1 semester*

Dec 2019 Teaching assistant *Data analysis*, master of physics, Université Paris Saclay, *15 hours total*

Outreach

2021–2022 Outreach science talks at University of Geneva for school students (from 6 to 18 years old), *2 hours/week for 1 semester*

2017–2020 Outreach science talks at the *Palais de la Découverte* museum in Paris, *62 hours/year for three years*

Academic service

2024–present Co-organizer of the cosmology seminars in DAMTP, Cambridge

2021–present Member of the Euclid Early Career Comittee, currently co-chairing, former chair (Sep. 2023–2024) Organization of

- Euclid Welcome Session, December 2023
- Early career workshop of the Euclid consortium meeting 2022 and 2023
- Flashtalk sessions of the Euclid consortium meeting 2022 and 2023
- Question/Answering sessions for early career researchers with the Euclid board

2023 Member of the Scientific Organisation Comittee for the Euclid consortium annual meeting in Copenhaguen, June 2023

2019 Co-organizer of the PhD students day of the Institut d'Astrophysique Spatiale (IAS), held on Dec. 9 2019

2019 Member of the Local Organisation Comittee for the 8th Euclid France Symposium, held at IAS, Nov. 27-29 2019

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

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

Personal Information

date of birth 5 August 1993

nationality French

Languages

French Native

English Fluent

Portuguese Fluent

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Main Publications

[1] Sebastian Belkner, Julien Carron, Louis Legrand, Caterina Umiltà, Clem Pryke, and Colin Bischoff. "CMB-S4: Iterative Internal Delensing and r Constraints". In: *Astrophys. J.* 964.2 (2024), p. 148. DOI: 10.3847/1538-4357/ad2351. arXiv: 2310.06729 [astro-ph.CO].

[2] Omar Darwish, Sebastian Belkner, Louis Legrand, Julien Carron, and Giulio Fabbian. "Non-Gaussian deflections in iterative optimal CMB lensing reconstruction". In: *Phys. Rev. D* 110.10 (2024), p. 103520. DOI: 10.1103/PhysRevD.110.103520. arXiv: 2407.00228 [astro-ph.CO].

[3] N. Frusciante et al. "Euclid: Constraining linearly scale-independent modifications of gravity with the spectroscopic and photometric primary probes". In: *Astron. Astrophys.* 690 (2024), A133. DOI: 10.1051/0004-6361/202347526. arXiv: 2306.12368 [astro-ph.CO].

[4] Sayan Saha, Louis Legrand, and Julien Carron. "Cluster profiles from beyond-the-QE CMB lensing mass maps". In: *JCAP* 01 (2024), p. 024. DOI: 10.1088/1475-7516/2024/01/024.

[5] Fabien Lacasa, Marie Aubert, Philippe Baratta, Julien Carron, Adélie Gorce, Sylvain Gouyou Beauchamps, Louis Legrand, Azadeh Moradinezhad Dizgah, and Isaac Tutusaus. "Efficient computation of the super-sample covariance for stage IV galaxy surveys". In: *Astron. Astrophys.* 671 (2023), A115. DOI: 10.1051/0004-6361/202245148.

[6] Louis Legrand and Julien Carron. "Robust and efficient CMB lensing power spectrum from polarization surveys". In: *Phys. Rev. D* 108.10 (2023), p. 103516. DOI: 10.1103/PhysRevD.108.103516.

[7] S. Ilić et al. "Euclid preparation - XV. Forecasting cosmological constraints for the Euclid and CMB joint analysis". In: *Astron. Astrophys.* 657 (2022), A91. DOI: 10.1051/0004-6361/202141556.

[8] Louis Legrand and Julien Carron. "Lensing power spectrum of the cosmic microwave background with deep polarization experiments". In: *Phys. Rev. D* 105.12 (2022), p. 123519. DOI: 10.1103/PhysRevD.105.123519.

[9] Louis Legrand, C. Hernández-Monteagudo, M. Douspis, N. Aghanim, and Raúl E. Angulo. "High resolution tomography for galaxy spectroscopic surveys with angular redshift fluctuations". In: *Astron. Astrophys.* 646 (2021), A109. DOI: 10.1051/0004-6361/202039049.

[10] Louis Legrand, H. J. McCracken, I. Davidzon, O. Ilbert, J. Coupon, N. Aghanim, M. Douspis, P. L. Capak, O. Le Fèvre, and B. Milvang-Jensen. "The COSMOS-UltraVISTA stellar-to-halo mass relationship: new insights on galaxy formation efficiency out to z $\sim$ 5". In: *Mon. Not. Roy. Astron. Soc.* 486.4 (2019), pp. 5468–5481. DOI: 10.1093/mnras/stz1198.

Collaboration Publications

[11] J. Adamek et al. *Euclid preparation - LXII. Simulations and non-linearities beyond Lambda cold dark matter. 1. Numerical methods and validation*. 2025. DOI: 10.1051/0004-6361/202452180. arXiv: 2409.03522 [astro-ph.CO].

[12] M. Archidiacono et al. *Euclid preparation - LIV. Sensitivity to neutrino parameters*. 2025. DOI: 10.1051/0004-6361/202450859. arXiv: 2405.06047 [astro-ph.CO].

[13] C. Bellhouse et al. *Euclid preparation LXX. Forecasting detection limits for intracluster light in the Euclid Wide Survey*. Mar. 2025. arXiv: 2503.17455 [astro-ph.GA].

[14] P. Bergamini et al. *Euclid Quick Data Release (Q1). The first catalogue of strong-lensing galaxy clusters*. Mar. 2025. arXiv: 2503.15330 [astro-ph.CO].

[15] H. Böhringer et al. *Euclid preparation - LV. Exploring the properties of proto-clusters in the Simulated Euclid Wide Survey*. 2025. DOI: 10.1051/0004-6361/202451683. arXiv: 2407.19919 [astro-ph.CO].

[16] P. Corcho-Caballero et al. *Euclid Quick Data Release (Q1). A probabilistic classification of quenched galaxies*. Mar. 2025. arXiv: 2503.15315 [astro-ph.GA].

[17] B. Csizi et al. *Euclid preparation - LXVII. Deep learning true galaxy morphologies for weak lensing shear bias calibration*. 2025. DOI: 10.1051/0004-6361/202452129. arXiv: 2409.07528 [astro-ph.CO].

[18] T. Dusserre et al. *Euclid Quick Data Release (Q1). The Euclid view on Planck galaxy protocluster candidates: towards a probe of the highest sites of star formation at cosmic noon*. Mar. 2025. arXiv: 2503.21304 [astro-ph.CO].

[19] C. Gouin et al. *Euclid Quick Data Release (Q1). The role of cosmic connectivity in shaping galaxy clusters*. Mar. 2025. arXiv: 2503.15332 [astro-ph.CO].

[20] A. Humphrey et al. *Euclid preparation. Estimating galaxy physical properties using CatBoost chained regressors with attention*. Apr. 2025. arXiv: 2504.13020 [astro-ph.GA].

[21] L. Ingoglia et al. *Euclid preparation - LXV. Determining the weak lensing mass accuracy and precision for galaxy clusters*. 2025. DOI: 10.1051/0004-6361/202452122. arXiv: 2409.02783 [astro-ph.CO].

[22] J. Lesgourgues et al. *Euclid preparation - LVI. Sensitivity to non-standard particle dark matter models*. 2025. DOI: 10.1051/0004-6361/202451611. arXiv: 2406.18274 [astro-ph.CO].

[23] N. Mai et al. *Euclid Quick Data Release (Q1). Combined Euclid and Spitzer galaxy density catalogues at $z > 1.3$ and detection of significant Euclid passive galaxy overdensities in Spitzer overdense regions*. Mar. 2025. arXiv: 2503.15331 [astro-ph.CO].

[24] H. J. McCracken et al. *Euclid Quick Data Release (Q1): VIS processing and data products*. Mar. 2025. arXiv: 2503.15303 [astro-ph.IM].

[25] C. J. R. McPartland et al. *Euclid preparation - LXIV. The Cosmic Dawn Survey (DAWN) of the Euclid Deep and Auxiliary Fields*. 2025. DOI: 10.1051/0004-6361/202451849. arXiv: 2408.05275 [astro-ph.GA].

[26] G. Rácz et al. *Euclid preparation - LXIII. Simulations and non-linearities beyond Lambda cold dark matter. 2. Results from non-standard simulations*. 2025. DOI: 10.1051/0004-6361/202452185. arXiv: 2409.03523 [astro-ph.CO].

[27] A. Ragagnin et al. *Euclid preparation - LXVI. Impact of line-of-sight projections on the covariance between galaxy cluster multi-wavelength observable properties: insights from hydrodynamic simulations*. 2025. DOI: 10.1051/0004-6361/202451347. arXiv: 2412.00191 [astro-ph.CO].

[28] E. Romelli et al. *Euclid Quick Data Release (Q1): From images to multiwavelength catalogues: the Euclid MERge Processing Function*. Mar. 2025. arXiv: 2503.15305 [astro-ph.IM].

[29] D. Scognamiglio et al. *Euclid preparation - LX. The use of HST images as input for weak-lensing image simulations*. 2025. DOI: 10.1051/0004-6361/202451587. arXiv: 2501.08372 [astro-ph.CO].

[30] M. Selwood et al. *Euclid preparation - LVII. Observational expectations for redshift $z < 7$ active galactic nuclei in the Euclid Wide and Deep surveys*. 2025. DOI: 10.1051/0004-6361/202450894. arXiv: 2405.18126 [astro-ph.GA].

[31] N. Tessore et al. *Euclid preparation - LIX. Angular power spectra from discrete observations*. 2025. DOI: 10.1051/0004-6361/202452018. arXiv: 2408.16903 [astro-ph.CO].

[32] S. de la Torre et al. *Euclid preparation. 3-dimensional galaxy clustering in configuration space. Part I. 2-point correlation function estimation*. Jan. 2025. arXiv: 2501.16555 [astro-ph.CO].

[33] M. Tucci et al. *Euclid Quick Data Release (Q1). Photometric redshifts and physical properties of galaxies through the PHZ processing function*. Mar. 2025. arXiv: 2503.15306 [astro-ph.GA].

[34] K. Voggel et al. *Euclid preparation - LVIII. Detecting extragalactic globular clusters in the Euclid survey*. 2025. DOI: 10.1051/0004-6361/202450851. arXiv: 2405.14015 [astro-ph.GA].

[35] L. Zalesky et al. *Euclid preparation - LXI. Cosmic Dawn Survey: 'Pre-launch' multiwavelength catalogues for Euclid Deep Field North and Euclid Deep Field Fornax*. 2025. DOI: 10.1051/0004-6361/202451857. arXiv: 2408.05296 [astro-ph.GA].

[36] B. Aussel et al. *Euclid preparation. XLIII. Measuring detailed galaxy morphologies for Euclid with machine learning*. 2024. DOI: 10.1051/0004-6361/202449609. arXiv: 2402.10187 [astro-ph.GA].

[37] L. Bisigello et al. *Euclid preparation - XLIX. Selecting active galactic nuclei using observed colours*. 2024. DOI: 10.1051/0004-6361/202450446. arXiv: 2409.00175 [astro-ph.GA].

[38] B. Bose et al. *Euclid preparation - XLIV. Modelling spectroscopic clustering on mildly nonlinear scales in beyond-ΛCDM models*. 2024. DOI: 10.1051/0004-6361/202348784. arXiv: 2311.13529 [astro-ph.CO].

[39] F. J. Castander et al. *Euclid. V. The Flagship galaxy mock catalogue: a comprehensive simulation for the Euclid mission*. May 2024. arXiv: 2405.13495 [astro-ph.CO].

[40] T. Castro et al. *Euclid preparation - XXXIX. The effect of baryons on the halo mass function*. 2024. DOI: 10.1051/0004-6361/202348388. arXiv: 2311.01465 [astro-ph.CO].

[41] T. Castro et al. *Euclid preparation. L. Calibration of the linear halo bias in $\Lambda(\nu)$CDM cosmologies*. 2024. DOI: 10.1051/0004-6361/202451230. arXiv: 2409.01877 [astro-ph.CO].

[42] G. Congedo et al. *Euclid preparation - LIII. LensMC, weak lensing cosmic shear measurement with forward modelling and Markov Chain Monte Carlo sampling*. 2024. DOI: 10.1051/0004-6361/202450617. arXiv: 2405.00669 [astro-ph.CO].

[43] M. S. Cropper et al. *Euclid. II. The VIS Instrument*. May 2024. DOI: 10.1051/0004-6361/202450996. arXiv: 2405.13492 [astro-ph.IM].

[44] A. C. Deshpande et al. *Euclid preparation - XXXVI. Modelling the weak lensing angular power spectrum*. 2024. DOI: 10.1051/0004-6361/202346110. arXiv: 2302.04507 [astro-ph.CO].

[45] F. Dournac et al. *Euclid preparation - XLVII. Improving cosmological constraints using a new multi-tracer method with the spectroscopic and photometric samples*. 2024. DOI: 10.1051/0004-6361/202450368. arXiv: 2404.12157 [astro-ph.CO].

[46] M. Y. Elkhashab et al. *Euclid preparation. The impact of relativistic redshift-space distortions on two-point clustering statistics from the Euclid wide spectroscopic survey*. Oct. 2024. arXiv: 2410.00956 [astro-ph.CO].

[47] A. Enia et al. *Euclid preparation - LI. Forecasting the recovery of galaxy physical properties and their relations with template-fitting and machine-learning methods*. 2024. DOI: 10.1051/0004-6361/202451425. arXiv: 2407.07940 [astro-ph.GA].

[48] C. Giocoli et al. *Euclid preparation - XXXII. Evaluating the weak-lensing cluster mass biases using the Three Hundred Project hydrodynamical simulations*. 2024. DOI: 10.1051/0004-6361/202346058. arXiv: 2302.00687 [astro-ph.CO].

[49] F. Hormuth et al. *Euclid. IV. The NISP Calibration Unit*. May 2024. arXiv: 2405.13494 [astro-ph.IM].

[50] K. Jahnke et al. *Euclid. III. The NISP Instrument*. May 2024. arXiv: 2405.13493 [astro-ph.IM].

[51] G. Jelic-Cizmek et al. *Euclid preparation - XL. Impact of magnification on spectroscopic galaxy clustering*. 2024. DOI: 10.1051/0004-6361/202348628. arXiv: 2311.03168 [astro-ph.CO].

[52] A. Kashlinsky et al. *Euclid preparation - XLVI. The near-infrared background dipole experiment with Euclid*. 2024. DOI: 10.1051/0004-6361/202449385. arXiv: 2401.17945 [astro-ph.CO].

[53] K. Koyama et al. *Euclid preparation. Simulations and nonlinearities beyond ΛCDM. 4. Constraints on $f(R)$ models from the photometric primary probes*. Sept. 2024. arXiv: 2409.03524 [astro-ph.CO].

[54] G. F. Lesci et al. *Euclid preparation - XXXVII. Galaxy colour selections with Euclid and ground photometry for cluster weak-lensing analyses*. 2024. DOI: 10.1051/0004-6361/202348743. arXiv: 2311.16239 [astro-ph.CO].

[55] L. Leuzzi et al. *Euclid preparation - XXXIII. Characterization of convolutional neural networks for the identification of galaxy-galaxy strong-lensing events*. 2024. DOI: 10.1051/0004-6361/202347244. arXiv: 2307.08736 [astro-ph.GA].

[56] E. Lusso et al. *Euclid preparation - XXXVIII. Spectroscopy of active galactic nuclei with NISP*. 2024. DOI: 10.1051/0004-6361/202348326. arXiv: 2311.12096 [astro-ph.GA].

[57] Y. Mellier et al. *Euclid. I. Overview of the Euclid mission*. May 2024. arXiv: 2405.13491 [astro-ph.CO].

[58] L. Paganin et al. *Euclid preparation: 6x2 pt analysis of Euclid's spectroscopic and photometric data sets*. Sept. 2024. arXiv: 2409.18882 [astro-ph.CO].

[59] A. Pezzotta et al. *Euclid preparation - XLI. Galaxy power spectrum modelling in real space*. 2024. DOI: 10.1051/0004-6361/202348939. arXiv: 2312.00679 [astro-ph.CO].

[60] L. Scharré et al. *Euclid preparation. XLV. Optical emission-line predictions of intermediate-z galaxy populations in GAEA for the Euclid Deep and Wide Surveys*. 2024. DOI: 10.1051/0004-6361/202449500. arXiv: 2402.03436 [astro-ph.GA].

[61] D. Sciotti et al. *Euclid preparation - LII. Forecast impact of super-sample covariance on 3×2pt analysis with Euclid*. 2024. DOI: 10.1051/0004-6361/202348389. arXiv: 2310.15731 [astro-ph.CO].

[62] M. Sereno et al. *Euclid preparation - XLII. A unified catalogue-level reanalysis of weak lensing by galaxy clusters in five imaging surveys*. 2024. DOI: 10.1051/0004-6361/202348680. arXiv: 2404.08036 [astro-ph.CO].

[63] S. Serrano et al. *Euclid preparation - XLVIII. The pre-launch Science Ground Segment simulation framework*. 2024. DOI: 10.1051/0004-6361/202349128. arXiv: 2401.01452 [astro-ph.CO].

[64] K. Tanidis et al. *Euclid preparation - XXXIV. The effect of linear redshift-space distortions in photometric galaxy clustering and its cross-correlation with cosmic shear*. 2024. DOI: 10.1051/0004-6361/202347870. arXiv: 2309.00052 [astro-ph.CO].

[65] V. Ajani et al. *Euclid Preparation. XXVIII. Forecasts for ten different higher-order weak lensing statistics*. 2023. DOI: 10.1051/0004-6361/202346017. arXiv: 2301.12890 [astro-ph.CO].

[66] L. Gabarra et al. *Euclid preparation. XXX. Performance assessment of the NISP Red-Grism through spectroscopic simulations for the Wide and Deep surveys*. 2023. DOI: 10.1051/0004-6361/202346177. arXiv: 2302.09372 [astro-ph.GA].

[67] K. Paterson et al. *Euclid preparation. XXVII. A UV-NIR spectral atlas of compact planetary nebulae for wavelength calibration*. 2023. DOI: 10.1051/0004-6361/202346252. arXiv: 2303.15525 [astro-ph.GA].

[68] M. Schirmer et al. *Euclid preparation. XXIX. Water ice in spacecraft part I: The physics of ice formation and contamination*. 2023. DOI: 10.1051/0004-6361/202346635. arXiv: 2305.10107 [astro-ph.IM].

[69] Kevork Abazajian et al. *Snowmass 2021 CMB-S4 White Paper*. Mar. 2022. arXiv: 2203.08024 [astro-ph.CO].

[70] Clarence L. Chang et al. *Snowmass2021 Cosmic Frontier: Cosmic Microwave Background Measurements White Paper*. Mar. 2022. arXiv: 2203.07638 [astro-ph.CO].

PhD Thesis

[71] Louis Legrand. "Large surveys : from galaxy evolution to cosmological probes". Université Paris-Saclay, Sept. 2020. URL: https://tel.archives-ouvertes.fr/tel-03164609.

Conference proceedings

[72] Louis Legrand and Julien Carron. "CMB lensing power spectrum with next generation surveys". In: *56th Rencontres de Moriond on Cosmology*. Mar. 2022. arXiv: 2203.08152 [astro-ph.CO].