

# Samuel Farrens

Research Director, CEA Paris-Saclay

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📍 Département d'Astrophysique, CEA Paris-Saclay, Orme des Merisiers, Building 709, F-91191 Gif-sur-Yvette, France

**Nationality:** Irish **Languages:** English (Native), Spanish (Fluent), French (B2/C1), Italian (Basic)

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## Work Experience

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- Jan 2026 – present  
**Commissariat à l'Énergie Atomique (CEA) Paris-Saclay, France**  
*Research Director*  
Projects: Euclid, AstroDeep, TITAN, TOSCA, UNIONS | Management: Euclid OU-LE3 co-lead; 3x2pt Pipeline Group co-lead
- Dec 2017 – Dec 2025  
**Commissariat à l'Énergie Atomique (CEA) Paris-Saclay, France**  
*Staff Researcher*  
Projects: Euclid, ARGOS, AstroDeep, COSMIC, DEDALE, TITAN, TOSCA, UNIONS | Management: Euclid OU-LE3 WL co-lead, COMB-CL lead, 3x2pt Pipeline Group co-lead; ARGOS WP7 lead; COSMIC/UNIONS software maintainer
- Oct 2015 – Nov 2017  
**Commissariat à l'Énergie Atomique (CEA) Paris-Saclay, France**  
*Postdoctoral Researcher*  
Funding: DEDALE FET H2020 | Projects: DEDALE, Euclid | Lead developer: PySAP, ModOpt
- Nov 2013 – Sep 2015  
**Osservatorio Astronomico di Trieste (INAF-OATS), Italy**  
*Postdoctoral Researcher*  
Funding: ASI – Euclid | Projects: Euclid
- Dec 2010 – Oct 2013  
**Institut de Ciències de L'Espai (ICE-IEEC), Spain**  
*Postdoctoral Researcher*  
Funding: CosmoComp FP7 ITN Fellowship (Marie Curie Actions) | Projects: DES, Euclid, PAU

## Education

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- Dec 2024  
**Université Paris-Saclay (UPS), France**  
*Habilitation à Diriger des Recherches (HDR)*  
Thesis: “Advanced tools and software development for cosmology”
- Oct 2007 – Nov 2010  
**University College London (UCL), UK**  
*PhD in Astrophysics*  
Thesis: “Optical Detection of Galaxy Clusters”
- Sep 2003 – Jun 2007  
**University College London (UCL), UK**  
*MSci in Astrophysics — First Class*  
Thesis: “Finding Clusters with  $10^6$  Luminous Red Galaxies”
- Sep 2002 – Jun 2003  
**Birkbeck College, University of London, UK**  
*Foundation Degree in Mathematics and Physics — Distinction*
- Jan 1999 – Dec 2001  
**Liceo de Atenas, Costa Rica**  
*International Baccalaureate Diploma — Distinction*

## Select Presentations

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- Dec 2025 **[Invited]** University of Turin Seminar, Turin, Italy  
“Probing the Dark Universe with Euclid”
- Sep 2025 **[Invited]** ASTRODAT, Durham, UK  
“Scientific Software Development”

- May 2025 **[Invited]** BDL3, Paris, France  
“Using AI to Probe the Invisible Universe”
- Apr 2023 **[Invited]** ADA X, Hersonissos, Greece  
“Scientific Software Development”
- Apr 2023 **[Invited]** ICDSS, Hefei, China  
“ShapePipe: Open source weak lensing for modern surveys”
- Jul 2022 EuroPython, Dublin, Ireland  
“ShapePipe: A modular weak-lensing pipeline”
- Sep 2021 **[Invited]** Artificial Intelligence 2021 (remote)  
“Python Sparse data Analysis Package”
- May 2021 **[Invited]** Where the Earth Meets the Sky (remote)  
“Hands-On Image Processing with PySAP”
- Nov 2020 **[Invited]** ADASS XXX, Granada, Spain (remote)  
“PySAP: From Galaxies to Brains and Beyond”
- Sep 2019 **[Keynote]** EuroScipy, Bilbao, Spain  
“From Galaxies to Brains! – Image processing with Python”
- May 2017 **[Invited]** Université Clermont Auvergne Seminar, Clermont-Ferrand, France  
“Regularisation techniques for solving inverse problems”

## Supervision

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### PhD Students

- Jan 2026 – present **Sammy Sharief**  
Co-supervised with François Lanusse and Tobias Liaudat
- Oct 2023 – present **Ezequiel Centofanti**  
Projects: ARGOS, Euclid | Thesis: “*Machine learning methods for radio and optical imaging in astronomy*” |  
Co-supervised with Jean-Luc Starck

### Postdoctoral Researchers

- Oct 2024 – present **Emma Ayçoberry**  
Projects: ARGOS, Euclid
- Oct 2024 – present **Cail Daley**  
Projects: Euclid, SPT, TOSCA, UNIONS | Co-supervised with Martin Kilbinger
- Oct 2024 – present **Calum Murray**  
Projects: Euclid, UNIONS | Co-supervised with Martin Kilbinger
- Feb 2022 – May 2024 **Lucie Baumont**  
Projects: Euclid, Rubin LSST, UNIONS | Co-supervised with François Lanusse and Martin Kilbinger
- Nov 2020 – Aug 2022 **André Zamorano Vitorelli**  
Projects: Euclid, UNIONS | Co-supervised with François Lanusse and Martin Kilbinger

### Research Engineers

- Mar 2025 – present **Chaitanya Chawak**  
Project: Euclid | Topic: Euclid OU-LE3 data model management and data-driven PSF model
- Nov 2023 – present **Nada Moukaddem**  
Project: Euclid | Topic: Euclid data-driven PSF model and cluster mass estimation
- Nov 2022 – present **Jennifer Pollack**  
Project: Euclid | Topic: PSF model integration into Euclid Science Ground Segment

Apr 2021 –  
Apr 2024 **Sergio Miranda La Hera**  
Project: Euclid | Topic: Euclid OU-LE3 data model management and software

## Master's Students

Apr – Sep  
2026 **Maxime Ronceray**  
*"Automatically Differentiable Image Simulations for Euclid"* | Co-supervised with François Lanusse

Apr – Sep  
2026 **Vincent Brunet**  
*"Galaxy shape inference with machine learning methods"* | Co-supervised with Emma Ayçoberry

Mar – Aug  
2025 **Manal Bensahli**  
*"Machine Learning for Radio Interferometric Array Design"* | Co-supervised with Ezequiel Centofanti

Mar – Aug  
2023 **Alex Szapiro**  
*"Star Selection for PSF Modelling with Deep Learning"*

Apr – Aug  
2021 **Olivier Roth**  
*"Unsupervised learning for galaxy cluster membership assignment"* | Co-supervised with Joana Frontera Pons

Sep 2019 –  
Feb 2020 **Sophie Starck**  
*"PySAP Software Development and Data Science"*

Jul – Dec  
2019 **Alice Lacan**  
*"Deep Learning for Multiclass Classification of Blended Galaxy Images"*

Jul – Dec  
2019 **Joël Gehin**  
*"Euclid Data Processing"*

Apr – Sep  
2018 **Alexandre Bruckert**  
*"Machine Learning and Image Deblending for Astrophysical Data"*

Nov 2017 –  
Apr 2018 **Hugo De Bouard**  
*"Déconvolution d'images de galaxies"*

Jul – Dec  
2017 **Xinyu Wang**  
*"Identification of Blended Galaxy Images"* | Co-supervised with Jean-Luc Starck

Apr – Sep  
2017 **Peipei Ran**  
*"Deconvolution of astrophysical images with space variant instrumental response"* | Co-supervised with Jean-Luc Starck

## Teaching

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Jan 2023 –  
present **UE PRAT M2 Master's Course, Sorbonne Université, Paris, France**  
Lecture: *"A practical introduction to signal processing in astrophysics"* (3.5 h/year)

Aug 2023 –  
present **École d'été Rodolphe Clédassou, France**  
Lecture: *"Scientific Software Development for Euclid"* (3 h/year)

Jul 2021 **EuroPython (remote)**  
Tutorial: *"The Anatomy of a Python Class"* (1.5 h)

Nov 2019 **Euclid C++/Python Workshop, Paris, France**  
Tutorials on Python and Make/CMake (10 h)

Sep 2019 **EuroScipy, Bilbao, Spain**  
Tutorial on Astronomical Image Processing (1.5 h)

May 2018 **ADAIX Summer School, Valencia, Spain**  
Tutorial on Sparsity (5 h)

May 2016 **ADA8 Summer School, Chania, Greece**  
Tutorial on Sparsity (3 h)

Jan & May 2011	ICE, Barcelona, Spain Lectures on cosmology for master's students (5 h)
Oct 2008 – Apr 2010	UCL, London, UK Marking: 1st Year Classical Mechanics, Thermodynamics, 3rd Year Practical Physics
Oct 2008 – Apr 2009	UCL, London, UK Tutoring undergraduate Maths and Physics

## Event Organisation

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Jan 2026	Euclid OU-LE3 Meeting, Bologna, Italy — Role: SOC
Jun 2025	COLOURS, Orsay, France — Role: Primary organiser, SOC and LOC
May 2025	Euclid 3x2pt Meeting, Paris, France — Role: LOC
Jun 2024	Euclid Consortium Meeting, Rome, Italy — Role: SOC
May 2024	COSMO21 Conference, Chania, Greece — Role: LOC
Jan 2024	Euclid France Meeting, Saclay, France — Role: LOC
Sep 2023	ADA X Summer School, Hersonissos, Greece — Role: LOC
Mar 2023	DAp GPU Half-Day, Saclay, France — Role: SOC and LOC
May 2018	ADA IX Summer School, Valencia, Spain — Role: Primary organiser, SOC and LOC
May 2018	COSMO21 Conference, Valencia, Spain — Role: LOC

## Community Activities

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Ongoing	Peer Review: Astronomy & Astrophysics (A&A), MNRAS, Computing in Science and Engineering
Apr 2024	PhD Jury — External <i>vocal</i> reviewer, Universitat Autònoma de Barcelona (Computer Science)
2018–2020	Project Review — Swiss National Science Foundation

## Computing Skills

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<b>Programming</b>	Python, C/C++, TensorFlow, Matlab/Octave, IDL, HTML, CSS/SASS
<b>Build &amp; DevOps</b>	Make, CMake, pyproject.toml, GitHub Actions, GitLab CI/CD, Docker, Singularity
<b>HPC &amp; Databases</b>	MPI, OpenMP, PBS, Slurm, GPU Computing, SQL
<b>Machine Learning</b>	Neural Networks, CNNs, SVMs
<b>Distribution</b>	PyPI, Conda, Homebrew
<b>Docs &amp; Testing</b>	Sphinx, Doxygen, $\LaTeX$ , PyTest, Catch2

## Observing

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Sep 2007	Australian Astronomical Observatory (AAO) Instruments: 3.9m telescope with the AAOmega spectrograph
Feb 2006	Observatoire de Haute-Provence (OHP) Instruments: 1.52m + AURELIE spectrograph; 1.2m + CCD camera

## Outreach

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Dec 2015	Workshop on Galaxy Zoo at Les Savanturiers, France
Mar 2010	Demonstrator at Your Universe, UCL festival of astronomy, UK