

# TOBIAS I. LIAUDAT

Ph.D. in Physics

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**Webpage:** [tobias-liaudat.github.io](https://tobias-liaudat.github.io) • **Software:** [github.com/tobias-liaudat](https://github.com/tobias-liaudat)

**Nationality:** Argentinian

*Last update: February 11, 2025*

## EDUCATION

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**CEA Saclay / Université Paris-Saclay**

Nov. 2019 - Oct. 2022

*Ph.D. in Physics*

*Saclay, France*

- Topic: Data-driven modelling of ground-based and space-based telescope's point spread functions.
- Supervisors: [Jean-Luc Starck](#) & [Martin Kilbinger](#).

**Université de Rennes I / CentraleSupélec / IMT Atlantique**

Aug. 2017 - Sep. 2018

*Master 2 Research - SISEA*

*Brest, France*

- Specialization in signal and image processing. Joint with IMT Atlantique engineering degree.
- Ranked 1st out of all master students.

**IMT Atlantique (Télécom Bretagne)**

Aug. 2016 - Sep. 2018

*Telecommunications Engineering degree*

*Brest, France*

- One of France's top-engineering schools. Specialization in signal and image processing, and machine learning.
- Recipient of the Eiffel excellence scholarship for a joint degree with the University of Buenos Aires.

**Engineering School of the University of Buenos Aires**

Mar. 2012 - Sep. 2019

*Electronic Engineering degree*

*Buenos Aires, Argentina*

- Specialization in signal and image processing, electronic circuits and computer science. GPA: 9.23/10.
- Ranked 4th of 1634 students when starting the joint degree in 2016.

## PROFESSIONAL EXPERIENCE

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**IRFU, CEA Saclay**

Dec. 2023 - Now

*Research Scientist*

*Saclay, France*

- Staff research scientist at the LILAS laboratory of the DEDIP department in the Institute of research into the fundamental laws of the Universe (IRFU).

**University College London, Computer Science Department**

Dec. 2022 - Nov. 2023

*Research Fellow in Artificial Intelligence for Imaging*

*London, UK*

- Research fellowship of 2 years to work with Profs [Jason McEwen](#), [Marcelo Pereyra](#) and [Marta Betcke](#).

**École Polytechnique, Applied Mathematics Department**

Aug. 2020 - Aug. 2022

*Teaching assistant*

*Palaiseau, France*

- Teaching for bachelor and MSc. students in the top ranked French engineering school.

**École Nationale de la Statistique de l'Administration Économique**

Oct. 2018 - Feb. 2019

*Research assistant*

*Palaiseau, France*

- Topic: Regularized optimal transport for signed measures. Supervisor: [Marco Cuturi](#).

**CosmoStat, CEA Saclay**

Mar. 2018 - Sep. 2018

*Research internship*

*Saclay, France*

- Topic: Distributed sparse blind source separation for very large-scale datasets. Supervisor: [Jérôme Bobin](#).

**Thales Air Systems**

Summer internship

Jul. 2017 - Sep. 2017

Limours, France

· Topic: Development of tools to evaluate civil radar performances. Supervisor: Daniel Nguyen.

**MEMBERSHIP IN SCIENTIFIC COLLABORATIONS****Euclid consortium**

Nov. 2019 - Present

**UNIONS/CFIS collaboration**

Nov. 2019 - Present

**COSMOS-Webb collaboration**

May 2022 - Present

**TECHNICAL SKILLS****Main programming language**

Python (TensorFlow, Numpy, ...)

**Programming languages I have used**

MATLAB, C, Java, Shell, Assembly

**Other tools**

Git, LaTeX, HPC (SLURM, TORQUE, SMP, MPI), CI, PyPI

Experience with CPU and GPU computer clusters

**Astronomical software**

PSFEx, SExtractor, GalSim, ShapePipe

**TEACHING****Qualification section 61 CNU, France**

Feb. 2023

- *Qualification* to be able to apply for professor positions in France's universities. CNU section 61 corresponds to computer science, control engineering and signal processing.

**École Polytechnique, Applied Mathematics Department**

Aug. 2020 - Aug. 2022

Teaching assistant at France's top engineering school. MSc and bachelor students.

Year 2021-2022 (32h)

- *Optimization and control* [MAP435] for MSc. students with Prof. [Grégoire Allaire](#).
- *Applied mathematics python projects* [MAP361P] for MSc. students with Prof. [Arvind Singh](#).

Year 2020-2021 (64h)

- *Statistics* [MAP433] for MSc. students with Prof. [Eric Moulines](#).
- *Optimization and control* [MAP435] for MSc. students with Prof. [Grégoire Allaire](#).
- *Mathematical modelling* [MAA107] for Bac. students with Profs. [Vincent Bansaye](#) and [Thibaut Mastrolia](#).
- *Applied mathematics python projects* [MAP361P] for MSc. students with Prof. [Arvind Singh](#).

**STUDENT INTERNSHIP SUPERVISION****CEA Saclay**

- [Mostafa Cherif](#), MSc. student, 6 months (2024). Topic: Uncertainty quantification for radio interferometry.
- [Ezequiel Centofanti](#), MSc. student, 6 months (2022). Topic: Improving WaveDiff PSF estimation for *Euclid*.
- [Aziz Ayed](#), MSc. student, 5 months (2021). Topic: Deep denoisers for the MCCD PSF model.
- [Jérôme Bonnin](#), MSc. student, 6 months (2019-2020). Topic: RCA for CFIS and the MCCD PSF model.

**SELECTED PRESENTATIONS AND CONFERENCES***Presentations within the Euclid Consortium are omitted.*Contributed poster at the [BASP Frontiers 2025](#) conference.

Villars-sur-Ollon, Switzerland. Jan. 2025

Invited talk at the [Deep CosmoStat Days](#) workshop.

Saclay, France. Jan. 2025

Invited seminar at the [InTheArt](#) seminar series.

Saclay, France. Nov. 2024

Invited talk at the [Séminaire de la Mission Numérique](#) meeting.

Grenoble, France. Nov. 2024

Invited talk at the PEPR NumPEX [Exa-DI](#) workshop.

Paris, France. Oct. 2024

Contributed talk at the [Cosmo21](#) conference.

Chania, Greece. May. 2024

Seminar at the Data Analysis Group at IRFU, CEA Saclay.

Saclay, France. March. 2024

Invited speaker at the Applied Inverse Problems ( <a href="#">AIP</a> ) conference.	Göttingen, Germany. Sep. 2023
Contributed talk at the European Astronomical Society meeting ( <a href="#">EAS 2023</a> ).	Krakow, Poland. Jul. 2023
Invited seminar at ULC Computer Science Department <a href="#">CMIC</a> .	London, UK. Jun. 2023
Invited seminar at the <a href="#">Imaging in Paris seminar</a> .	Insitut Henri Poincaré, Paris. Jun. 2023
Invited speaker at the <a href="#">BASP Frontiers</a> conference.	Switzerland, Feb. 2023
Invited poster at Interfacing Bayesian statistics, machine learning, applied analysis, and blind and semi-blind imaging inverse problems' <a href="#">workshop</a> .	Edinburgh, Jan. 2023
Invited seminar at the School of Math. and Computer Sciences at Heriot-Watt Univ.	Edinburgh, Sep. 2022
Invited seminar to the BASP group at Heriot-Watt Univ.	Online. Mar. 2022
Invited seminar to the PSF modelling group of the LSST DESC collaboration.	Online. Mar. 2022
Talk at the SIAM 2022 Conference on Imaging Science ( <a href="#">IS22</a> ).	Online. Mar. 2022
Poster at the 2021 NeurIPS, Machine Learning and the Physical Sciences <a href="#">Workshop</a> .	Online. Dec. 2021
Talk at the lancement de l'axe astrophysique de la Graduate School Physique.	Saclay, France. Nov. 2021
Talk at the <a href="#">52èmes Journées</a> de Statistiques de la Société Française de Statistique.	Online. Jun. 2021
Talk at the <a href="#">Peyresq summer school</a> on signal and image processing.	Online. Jun. 2021
Talk at the 2021 UNIONS CFIS/Pan-STARRS/WISHES collaboration <a href="#">meeting</a> .	Online. Mar. 2021
Poster at the <a href="#">SPARS</a> conference.	Toulouse, France. Jul. 2019
Invited seminar at <a href="#">CEA CosmoStat's group</a> .	Saclay, France. Feb. 2019

## AWARDS & DISTINCTIONS

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<i>Distinguished student award</i>	University of Buenos Aires, Argentina, 2017
<i>Eiffel excellence scholarship</i>	Campus France, 2016
- Awarded to outstanding international students to do a joint degree in France.	
Gold medal award	St. Luke's College, Buenos Aires, Argentina, 2011
- Delivered to the best student of the 2011 class.	

## MISCELLANEOUS

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- Fluent in Spanish (mother tongue), English and French.
- Organizer of the [Seminare Palaisien](#) and previous organizer of the [CosmoStat](#) Journal club.
- Reviewed articles for ApJ, MNRAS, Phil. Trans. A, and NeurIPS.