

## EDUCATION

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### PhD in Astrophysics

Université de Montréal, Mila, CIELA

09/2022–09/2026\*

Preliminary Thesis Title: *Subgalactic dark matter inference with strong lensing and machine learning*

Advisors: Prof. Yashar Hezaveh and Prof. Laurence Perreault-Levasseur

\*Expected completion date

### M.Sc. in Physics<sup>†</sup>

Technical University of Munich

10/2019–04/2022

Max Planck Institute for Astrophysics

03/2021–04/2022

Thesis Title: *Studying Emission-Line Galaxies with Strong Gravitational Lensing*

Advisors: Prof. Sherry Suyu and Dr. Yiping Shu

<sup>†</sup>Passed with merit

### B.Sc. in Physics

Technical University of Munich

10/2016–02/2020

Thesis Title: *Study of Vibrational Noise for the NUCLEUS Experiment*

Advisors: Prof. Raimund Strauß and Alexander Langenkämper

## SCHOLARSHIPS

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Final year scholarship, (excellence scholarship), 10 000 CAD	06/2025 –04/2026
Bourse J. Armand Bombardier, (named scholarship), 10 000 CAD	2025
Bourse J. Armand Bombardier, (named scholarship), 10 000 CAD	2024
Bourse J. Armand Bombardier, (named scholarship), 10 000 CAD	2023
Bourse Exemption UdeM 3e cycle, (excellence scholarship), 22 241.25 CAD	09/2023-08/2024
Bourse Exemption UdeM 3e cycle, (excellence scholarship), 21 593.25 CAD	09/2022-08/2023
CRAQ co-supervision scholarship, 15 000 CAD	09/2022-08/2024

## TALKS AND POSTERS

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Talk, CosmoStat Seminar	Paris-Saclay, France, 2026
Talk, Hamburg Observatory Cosmology Seminar	Hamburg, Germany, 2026
Talk, Stony Brook Astrophysics Seminar	Stony Brook, NY, USA, 2025
Talk, Dark Matter Working Group Presentation of DESC Project	online, 2025
Poster, open SkAI	Chicago, USA, 2025
Poster, ML4Astro workshop	Vancouver, Canada, 2025
Invited Talk, Cosmology from home ( <a href="#">link</a> )	online, 2025
Talk, LSST collaboration meeting	Zurich, Switzerland, 2024
Flash Talk, LSST collaboration meeting	SLAC, Stanford, USA, 2023
Poster, Statistical Challenges in Modern Astronomy (SCMA) VIII	Penn State University, USA, 2023
Talk, Center for Research in Astrophysics of Quebec annual meeting	Lac-à-l'Eau-Claire, Canada, 2023
Flash Talk, Virtual SDSS Collaboration Meeting	online, 2021
Flash Talk, Lensing Odyssey Workshop	Kouremonos, Greece, 2021

## PACKAGES AND CODE DEVELOPMENT

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Contributions to: *Caustics - the lensing pipeline of the future* ([Caustics](#))

## SKILLS

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**Python packages:** pytorch, numpy, pandas, sympy, tensorflow, jax, astropy, scipy, emcee

**Programming:** Python, IDL, Latex  
(+ PyCharm, Jupyter, Github)

## LANGUAGES

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**German:** Native

**English:** Fluent

**French:** Advanced

**Norwegian:** Intermediate

## OUTREACH AND SERVICE

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Referee for 2025 NeurIPS Workshop on ML4PS, San Diego	2025
ML4Astro Workshop colocated at ICML 2025, Vancouver	2025
Organizing Committee - Mila ML4PS Reading Group Talk Series	01/2023 - present
Lead Organizer - Weekly CIELA Group Meeting	11/2022 - 05/2025
Conference Local Organizing Committee S2D Conference, Montreal, Canada	05/2023
Member of the CIELA Institute EDI committee	09/2022 - present

## OBSERVATIONAL EXPERIENCE

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Lick observatory, Mount Hamilton, USA - *2 nights* 05/2022

## PROJECT MEMBERSHIP

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Member of the Rubin Observatory LSST Dark Energy Science Collaboration (DESC)

Member of the Strong Gravitational Lensing Science Collaboration (SLSC)

Member of Euclid Collaboration

## FIRST AUTHOR PUBLICATIONS

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### 2025

*Predicting the Subhalo Mass Functions from Galaxy Images in DREAMS Simulations*

**Andreas Filipp**, Tri Nguyen, Laurence Perreault-Levasseur, Jonah Rose, Chris Lovell, Nicloas Payot, Francisco Villaescusa-Navarro, and Yashar Hezaveh

[In prep.]

*LSST Strong Lensing Systems Dark Matter Sensitivity Forecast with Neural Ratio Estimators*

**Andreas Filipp**, Yashar Hezaveh, Laurence Perreault-Levasseur, and the LSST Dark Energy Science Collaboration

[Submitted for DESC internal review]

*Predicting the Subhalo Mass Functions in Simulations from Galaxy Images*

**Andreas Filipp**, Tri Nguyen, Laurence Perreault-Levasseur, Jonah Rose, Chris Lovell, Nicloas Payot, Francisco Villaescusa-Navarro, and Yashar Hezaveh

[Published at ML4Astro Workshop at ICML 2025, ([link](#)), arxiv:2510.14766]<sup>‡</sup>

*Robustness of Neural Ratio and Posterior Estimators to Distributional Shifts for Population-level Dark Matter Analysis in Strong Gravitational Lensing*

**Andreas Filipp**, Yashar Hezaveh, and Laurence Perreault-Levasseur

[ApJ 989 226, 10.3847/1538-4357/adee20, arxiv:2411.05905]

### 2024

*Neural Ratio Estimators Meet Distributional Shift and Mode Misspecification: A Cautionary Tale from Strong Gravitational Lensing*

**Andreas Filipp**, Yashar Hezaveh, and Laurence Perreault-Levasseur

[Published at ICML 2024 SPIGM workshop, ([link](#))]\*

**2023**

*Simulation-guided galaxy evolution inference: A case study with strong lensing galaxies*

**Andreas Filipp**, Yiping Shu, Ruediger Pakmor, Sherry H. Suyu, and Xiaosheng Huang

[A&A 677 A113, 10.1051/0004-6361/202346594, arxiv:2307.15044]

‡: peer-reviewed by two reviewers, acceptance rate: 61%

\*: peer-reviewed by two reviewers

## OTHER PEER-REVIEWED PUBLICATIONS

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**2025**

*DESI Strong Lens Foundry III: Keck Spectroscopy for Strong Lenses Discovered Using Residual Neural Networks*

Shrihan Agarwal, Xiaosheng Huang, William Sheu, Christopher J. Storfer, Marcos Tamargo-Arizmendi, Suchitoto Tabares-Tarquino, D.J. Schlegel, G. Aldering, A. Bolton, A. Cikota, Arjun Dey, **A. Filipp**, E. Jullo, K.J. Kwon, S. Perlmutter, Y. Shu, E. Sukay, N. Suzuki, J. Aguilar, S. Ahlen, S. BenZvi, D. Brooks, T. Claybaugh, P. Doel, J. E. Forero-Romero, E. Gaztañaga, S. Gontcho A Gontcho, G. Gutierrez, K. Honscheid, M. Ishak, S. Juneau, R. Kehoe, T. Kisner, S. E. Kuposov, A. Lambert, M. Landriau, L. Le Guillou, A. de la Macorra, A. Meisner, R. Miquel, J. Moustakas, A. D. Myers, C. Poppett, F. Prada, I. Pérez-Ràfols, G. Rossi, E. Sanchez, M. Schubnell, D. Sprayberry, G. Tarlé, B. A. Weaver, H. Zou  
[Submitted to ApJ, arXiv:2509.18086]

*DESI Strong Lens Foundry I: HST Observations and Modeling with GIGA-Lens*

X. Huang, S. Baltasar, N. Ratier-Werbin, C. Storfer, W. Sheu, S. Agarwal, M. Tamargo-Arizmendi, D.J. Schlegel, J. Aguilar, S. Ahlen, G. Aldering, S. Banka, S. BenZvi, D. Bianchi, A. Bolton, D. Brooks, A. Cikota, T. Claybaugh, A. de la Macorra, A. Dey, P. Doel, J. Edelstein, **A. Filipp**, J.E. Forero-Romero, E. Gaztanaga, S. Gontcho A Gontcho, A. Gu, G. Gutierrez, K. Honscheid, E. Jullo, S. Juneau, R. Kehoe, D. Kirkby, T. Kisner, A. Kremin, K.J. Kwon, A. Lambert, M. Landriau, D. Lang, L. Le Guillou, J. Liu, A. Meisner, R. Miquel, J. Moustakas, A. D. Myers, S. Perlmutter, I. Perez-Rafols, F. Prada, G. Rossi, D. Rubin, E. Sanchez, M. Schubnell, Y. Shu, E. Silver, D. Sprayberry, N. Suzuki, G. Tarle, B.A. Weaver, and H. Zou

[Submitted to ApJ, arXiv:2502.03455]

**2024**

*Caustics: A Python Package for Accelerated Strong Gravitational Lensing Simulations*

Connor Stone, Alexandre Adam, Adam Coogan, M. J. Yantovski-Barth, **Andreas Filipp**, Landung Setiawan, Cordero Core, Ronan Legin, Charles Wilson, Gabriel Missael Barco, Yashar Hezaveh, and Laurence Perreault-Levasseur

[2024JOSS 9 7081, arXiv:2406.15542]

**2022**

*GIGA-Lens: Fast Bayesian Inference for Strong Gravitational Lens Modeling*

A. Gu, X. Huang, W. Sheu, G. Aldering, A. S. Bolton, K. Boone, A. Dey, **A. Filipp**, E. Jullo, S. Perlmutter, D. Rubin, E. F. Schlafly, D. J. Schlegel, Y. Shu, and S. H. Suyu

[ApJ 935 49, 10.3847/1538-4357/ac6de4, arxiv:2202.07663]

*The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data*

The SDSS Collaboration (with **A. Filipp**)

[ApJS 259 35, 10.3847/1538-4357/ac6de4, arxiv:2112.02026]