

Curriculum Vitae

Adélie Garin



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adeliegarin

A propos

- Enterprising and responsible
I can engage in several projects simultaneously and achieve my goals.
- Passionate and curious
I enjoy discovering new things and sharing them with others.
- Open-minded and sociable
I easily integrate into a team and enjoy networking.
- Intuitive and fast
I enjoy solving logical and complex problems.

Education

- Ph.D. in Mathematics, EPFL (10.2018 - 04.2022)
Thesis Advisor: Kathryn Hess
Topological data analysis, Inverse problems, Image analysis.
Thesis Title:
From Trees to Barcodes and Back Again: A Combinatorial, Probabilistic and Geometric Study of a Topological Inverse Problem
- Master's in Mathematics, University of Geneva (2016-2018)
Excellence Scholarship
- Bachelor's in Mathematics, University of Geneva & University of California, San Diego (2013-2016)
Academic exchange, Master and doctoral school-level coursework

References

- Prof Kathryn Hess, Professor of Mathematics and Life Sciences, Associate Vice President EPFL
- Dr Elise Raphael, Scientific Officer at SwissMAP research station, UNIGE

Professional Experience

- 02.24-now Project Officer in Education for Sustainability and Transversal Skills
EPFL
- 09.22-01.24 Teacher and Referee for the *Propaedeutic Center* EPFL
Teaching lectures, supporting teachers, managing exams for first-year common courses, analyzing and developing support measures for students and teachers
- 04.22-08.22 Postdoctoral Researcher in Mathematics EPFL
Mathematics Research, Laboratory for Topology and Neuroscience
- 10.18-03.22 Ph.D. Assistant in Mathematics EPFL
Mathematics research, teaching
- 2016-2018 Research and Teaching Assistant UNIGE
Teaching Assistant for first-year students, animator at *Mathscope*, mentor for *Athena program*

Teaching

- 2023 Lectures EPFL
Analysis I (flipped classroom) and Analysis II
- 2019-2022 *Euler Courses* EPFL
Teaching Geometry I & Algebraic Structures (course material creation)
- 2020 & 2022 MAN++ Preparation Week EPFL
Teaching preparation course for MAN++ in Algebraic Structures
- 2019-2022 Project Supervision EPFL
Supervision of various Bachelor projects and interns
- 2016-2018 Teaching Assistant UNIGE
Exercise sessions, specifically to develop writing skills and logical thinking

Management and Coordination

- 2023 Organizer - *CRM Continuing Education* Switzerland
Organization of continuing education for secondary II teachers through the Romand Commission of Mathematics, on the theme "Engaged Maths" (sustainability and societal issues)
- 2022 Founder & organizer - *Climathics Workshop* SwissMAP research station, les Diablerets
Organization of a conference on mathematics and climate, fundraising requests, event management and coordination
- 2022 Founder of *La Matrice* Switzerland
Association aimed at creating a link between scientists and the general public in the fields of science, sustainability, and feminism
- 2020-2022 Program Committee ICLR 2021-22 & NeurIPS 2022
Contributions to the selection of articles in mathematics and computer science
- 2019-2022 Organizer - *Applied Topology Seminar* EPFL
Organizer of the weekly applied topology seminar
- 2019-2021 PhD Representative EDMA, EPFL
- 2019 Organizer - *Young Topologists Meeting* EPFL
Organization and planning of the conference (250 participants), fundraising
- 2019 Organizer - *TopApp Workshop* IST Austria
3-day workshop for PhD students in Computational Topology
- 2016-2017 President of the Student Association of Sciences UNIGE
Organization of events for the Faculty of Sciences

Certifications and Training

- Climate Fresk Facilitator, 2022
- J+S Swimming, 2014
- J+S Skiing, 2014

Languages

- French, native language
- English, bilingual
- German, intermediate
- Spanish, basic

Awards and Scholarships

- Teaching Award, EPFL, 2020
For outstanding service in teaching during the year.
- Excellence Scholarship, UNIGE, 2016
Scholarship for Master's students with exceptional results and high motivation.
- Boninchi Scholarship, UNIGE/UCSD, 2016
Exchange scholarship
- Emilie Gourd Prize Laureate, State of Geneva, 2013
Prize for a maturity project related to gender equality, creation of a brochure for career orientation with female role models in the professional world.
- Rotary Club Prize, CEC André-Chavanne, 2013
Prize for exceptional involvement in college life.
- Mathematics Prize and Highest GPA, CEC André-Chavanne, 2013

Interests & Others

- Member of the Municipal Council Green Party of Prilly
- Associative
Member of Reatch & Longboard Girls Crew Switzerland
- Outdoor Sports
Rock climbing, ski touring, surfing, longboard dancing
- Creative Hobbies
Sewing, painting, photography
- Slow Travel

Scientific Communication

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| 2023 | Workshop on Sustainability in Basic Science Education
"Teaching and Learning for Change", Bern
Organization, along with the EPFL sustainability team, of a workshop-discussion on integrating sustainability into basic science education | Conference |
| 2023 | Seminar-discussion on Mathematics and Sustainability
Presentation on mathematical communication and the importance of addressing sustainability, followed by organization of a workshop-discussion on the topic | Sédimaths |
| 2023 | Animator for Les Marmottes
Animation of a week of mathematics for high school girls | SwissMAP research station, les Diablerets |
| 2023 | Continuing Education for Teachers
Presentations for the continuing education of mathematics teachers | Gymnase de Chamberonne |
| 2022 | Radio Interview for an Outreach Science Program
Interview to discuss mathematics and climate | CQFD, RTS |
| 2022 | Finalist in the My Thesis in 180 Seconds Competition | EPFL |
| 2021-2022 | Logic Workshop: Mathematics to Understand the World
Creation of a logic workshop for ages 12 and up. Workshops conducted in classes by the science promotion service and in other classes. | EPFL |
| 2018-2021 | Outreach Events
Facilitation of workshops at various EPFL events, such as open days and career days. | EPFL |
| 2017 | Science Me! Contest
Competition of scientific shows | Hanover, Germany |
| 2016-2018 | Mathscope
Facilitation of mathematical workshops with groups aged 5 to 60. | UNIGE |
| 2017 | EuroScienceFun
Outreach science conference | Bonn, Germany |
| 2016 | Programme Athena
Supervision of high school students taking university courses. | UNIGE |

Research Programs and Workshops

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| 2023 | SwissMAP Research Stay
One-week stay to write a mathematics exercise book related to sustainability. | SwissMAP Research station, les Diablerets |
| 2021 | MSRI Summer Research Program for Women in Mathematics
Summer research program for women in mathematics to continue the collaboration initiated in 2019 at the Women in Computational Topology workshop.
Postponed from 2020 to 2021 due to COVID-19 pandemic | |
| 2020 | GeoCoW Workshop
Poster presentation: <i>A Topological Reading Lesson: a TDA pipeline in image analysis</i> | Les Diablerets, Switzerland |
| 2019 | Research Stay
Research stay at the Australian National University visiting Katharine Turner and Vanessa Robins to continue work started at the WinComp-Top in the summer of 2019. | Australian National University, Canberra |
| 2019 | Women in Computational Topology Workshop
5-day workshop in a group led by Vanessa Robins, working on persistent homology for images depending on the resolution. | ANU, Canberra |
| 2017 | Women in Topology Workshop
3-day workshop in a group led by Kathryn Hess, working on directed persistent homology. | MSRI, Berkeley |

Academic CV

Publications

- From trees to barcodes and back again II: Combinatorial and probabilistic aspects of a topological inverse problem, 2021, published 2023
With Justin Curry, Jordan DeSha, Kathryn Hess, Lida Kanari and Brendan Mallery
Journal of Computational Geometry: Theory and Applications
- Persistent Homology with Improved Locality Information for more Effective Delineation, 2023
With Doruk Oner, Mateusz Koziński, Kathryn Hess and Pascal Fua
Transactions on Pattern Analysis and Machine Intelligence
- Stratifying the space of barcodes using Coxeter complexes, 2022
With Benjamin Brück
Journal of Applied and Computational Topology
- Stratifying the space of barcodes using Coxeter complexes, 2022
With Benjamin Brück
Extended Abstract for the 2022 SoCG Young Researcher Forum
- The Impact of Changes in Resolution on the Persistent Homology of Images, 2021
With Teresa Heiss, Sarah Tymochko, Brittany Story, Hoa Bui, Bea Bleile, and Vanessa Robins
IEEE BigData 2021 workshop Applications of Topological Data Analysis to 'Big Data'
- The persistent homology of dual digital image constructions, 2021
with Bea Bleile, Teresa Heiss, Kelly Maggs and Vanessa Robins
Research in Computational Topology 2, Women in Computational Topology (WinCompTop) Second Workshop Proceedings
- From trees to barcodes and back again: theoretical and statistical perspectives, 2020
with Lida Kanari and Kathryn Hess
Algorithms, Special issue on TDA
- Duality in Persistent Homology of Images, 2020
with Teresa Heiss, Kelly Maggs, Bea Bleile and Vanessa Robins
Extended Abstract for the 2020 SoCG Young Researcher Forum
- A Topological "Reading" Lesson: Classification of MNIST using TDA, 2019
With Guillaume Tauzin
ICLMA 2019 Proceedings

Selected Talks

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| 2023 | Seminar Geometric Group Theory and Algebraic Topology UC Louvain
<i>Stratifying the space of barcodes using Coxeter complexes</i> |
| 2023 | Séminaire Francophone de théorie géométrique des groupes online
<i>Quand la TDA rencontre la théorie géométrique des groupes : Une stratification de l'espace des codes-barres à l'aide de complexes de Coxeter</i> |
| 2022 | Summer in Topology Conference University of Vienna (online)
<i>Stratifying the space of barcodes using Coxeter complexes</i> |
| 2022 | ATMCS conference University of Oxford
<i>Poster presentation: From trees to barcodes and back again: Combinatorial and geometric perspectives</i> |
| 2022 | SOCG Young Researcher Forum Berlin
<i>Stratifying the space of barcodes using Coxeter complexes</i> |
| 2022 | AATRN seminar online
<i>From trees to barcodes and back again: Combinatorial and geometric perspectives</i> |
| 2022 | Statistics Seminar University of Aarhus
<i>From trees to barcodes and back again: Combinatorial and probabilistic perspectives</i> |
| 2021 | Data Science Seminar Colorado State University (online)
<i>From trees to barcodes and back again: Combinatorial and probabilistic perspectives</i> |
| 2021 | Working group in TDA Michigan State University (online)
<i>From trees to barcodes and back again: Combinatorial and probabilistic perspectives</i> |
| 2021 | Applied Topology in Albany (ATiA) seminar online
<i>From trees to barcodes and back again: Combinatorial and probabilistic perspectives</i> |
| 2021 | Working group in TDA Montpellier, online
<i>Aller-retour entre arbres et barcodes</i> |
| 2020 | ETH Geometry Graduate Colloquium ETHZ, online
<i>From trees to barcodes and back again: at the melding point of topology, geometry, group theory and probability</i> |
| 2020 | Oxford Applied Topology Seminar University of Oxford, online
<i>Noisy neurons and rainbow worms: theoretical and statistical perspectives on trees and their barcodes</i> |
| 2020 | SMB minisymposium minisymposium on TDA and network science for biological data (Heidelberg, moved online)
<i>Topological Data Analysis for (biological) image analysis</i> |
| 2020 | SoCG Young Researcher Forum ETHZ (moved online)
<i>Duality in Persistent Homology of Images</i> |
| 2020 | Brain Mind Institute annual report EPFL
<i>Topological Data Analysis for Image Processing</i> |
| 2019 | Topology Seminar Australian National University
<i>A Topological Reading lesson: a TDA pipeline in image analysis</i> |
| 2019 | Graduate Seminar University of Geneva
<i>Euler calculus and Euler Characteristic Transform</i> |
| 2019 | TopApp Workshop IST Austria
<i>From Euler curves to shapes: going backward</i> |
| 2017 | Topology Seminar University of Geneva
Talk on persistent homology and stability theorem. |
| 2017 | Workshop on persistent homology Institut Alexander Grothendieck, Montpellier
Two talks on persistent homology and stability theorem |