

Romain Petit

POSTDOCTORAL RESEARCHER IN APPLIED MATHEMATICS

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Academic positions

Postdoctoral researcher

CNRS, ÉCOLE NORMALE SUPÉRIEURE

- Topic: analysis of transformers
- Host: Gabriel Peyré

Paris, France

Since Oct. 2024

Postdoctoral researcher

MACHINE LEARNING GENOA CENTER (MALGA), UNIVERSITY OF GENOA

- Topic: nonlinear inverse problems
- Host: Giovanni S. Alberti

Genoa, Italy

Jan. 2023 - Sept. 2024

Education

PhD, applied mathematics

UNIVERSITÉ PARIS DAUPHINE - PSL

- Reconstruction of piecewise constant images via total variation regularization: exact support recovery and grid-free numerical methods
- Supervisors: Vincent Duval and Yohann De Castro
- Committee: B. Buet, A. Chambolle, M. Dambrine (reviewer), S. Masnou, G. Peyré (president), O. Scherzer (reviewer)

Paris, France

Oct. 2019 - Dec. 2022

Master of science, mathematics vision and learning (*Master MVA*)

ÉCOLE NORMALE SUPÉRIEURE PARIS-SACLAY

Paris, France

2018 - 2019

Master of science, applied mathematics (*diplôme d'ingénieur*)

ÉCOLE NATIONALE DES PONTS ET CHAUSSEES

Paris, France

2015 - 2019

Scientific contributions

ARTICLES

[5] On the nonconvexity issue in the radial Calderón problem

GIOVANNI S. ALBERTI, ROMAIN PETIT, CLARICE POON, IRÈNE WALDSPURGER

Submitted, [arxiv:2507.03379](https://arxiv.org/abs/2507.03379)

2025

[4] A convex lifting approach for the Calderón problem

GIOVANNI S. ALBERTI, ROMAIN PETIT, SIMONE SANNA

Submitted, [arxiv:2507.00645](https://arxiv.org/abs/2507.00645)

2025

[3] Localization of point scatterers via sparse optimization on measures

GIOVANNI S. ALBERTI, ROMAIN PETIT, MATTEO SANTACESARIA

SIAM Journal on Imaging Sciences, [arxiv:2402.00737](https://arxiv.org/abs/2402.00737)

2024

[2] Exact recovery of the support of piecewise constant images via total variation regularization

YOHANN DE CASTRO, VINCENT DUVAL, ROMAIN PETIT

Inverse Problems, [arxiv:2307.03709](https://arxiv.org/abs/2307.03709)

Short version (in French): GRETSI 2023, [hal-04171535](https://arxiv.org/abs/2401.04171)

2024

[1] Towards off-the-grid algorithms for total variation regularized inverse problems

YOHANN DE CASTRO, VINCENT DUVAL, ROMAIN PETIT

Journal of Mathematical Imaging and Vision, [arxiv:2104.06706](https://arxiv.org/abs/2104.06706)

Short version: SSVM 2021, [arxiv:2104.06706v2](https://arxiv.org/abs/2104.06706v2)

2023

SOFTWARES

RadialCalderon.jl

Resolution of the Calderón problem with piecewise constant radial conductivities

github.com/rpetit/RadialCalderon.jl (documentation available at rpetit.github.io/RadialCalderon.jl)

Julia

PointScat

Localization of pointlike inhomogeneities in an inverse acoustic scattering problem

github.com/rpetit/pointscat

Python (JAX)

TV-SFW

Grid-free numerical resolution of least squares problems with total (gradient) variational regularization

github.com/rpetit/tvsfw

Python

PyCheeger

Numerical resolution of a generalized Cheeger problem

github.com/rpetit/pycheeger

Python

Teaching

Université Paris Dauphine - PSL

2019 - 2022

DEPARTMENT OF APPLIED MATHEMATICS

- Algebra (bachelor 1st year), courses and exercise sessions, 120 hours
- Probabilities (bachelor 1st year), exercise sessions, 20 hours

Talks

INTERNATIONAL CONFERENCES

Applied Inverse Problems Conference (AIP)

Sept. 2023

[Göttingen, Germany](#)

Conference on Calculus of Variations

July 2022

[Lille, France](#)

International Conference on Computational and Methodological Statistics (CMStatistics)

Dec. 2021

[London, UK](#)

International Conference on Scale Space and Variational Methods in Computer Vision (SSVM)

May 2021

[Online](#)

NATIONAL CONFERENCES

Colloque Francophone de Traitement du Signal et des Images (GRETSI)

Sept. 2023

[Grenoble, France](#)

Congrès National d'Analyse Numérique (CANUM)

June 2022

[Evian, France](#)

SEMINARS AND WORKSHOPS

Workshop Inverse Problems and Imaging (CIRM)

Oct. 2025

[Marseille, France](#)

MAP5 imaging seminar (Université Paris Cité)

Nov. 2024

[Paris, France](#)

10 years of the INRIA team MOKAPLAN

June 2024

[Fontainebleau, France](#)

Statistics, Probabilities, Optimization and Control seminar (Institut de Mathématiques de Bourgogne)

Feb. 2024

[Dijon, France](#)

Applied Analysis seminar (Institut de Mathématiques de Marseille)

Dec. 2023

[Marseille, France](#)

Workshop Off-the-grid and Continuous Methods for Optimization and Inverse Problems in Imaging

Nov. 2023

[Paris, France](#)

Paris-Saclay Signal Seminar

Nov. 2023

[Paris, France](#)

Imaging in Paris seminar

Nov. 2023

[Paris, France](#)

Machine Learning and Signal Processing seminar (ENS Lyon)

Oct. 2023

[Lyon, France](#)

Seminar of the INRIA team MORPHEME

Sophia-Antipolis, France

April 2023

Inverse Problems and Mathematical Imaging seminar (University of Graz)

Graz, Austria

Nov. 2022

Calculus of Variations seminar (GT CalVa)

Paris, France

May 2022

CEREMADE young researchers seminar (Université Paris Dauphine - PSL)

Paris, France

Nov. 2021

Research visits

Universidad de los Andes, one month (collaborator: Mauricio Velasco)

Bogotá, Colombia

Oct. 2019

Grants

- 5000 € grant from Fondation Mathématique Jacques Hadamard, PGMO young project EIT Lift

Service

Responsibilities

- Member of the program committee, SSVM 2025

Reviewing

- Journals: Journal of Mathematical Imaging and Vision, Inverse Problems, Numerische Mathematik, SIAM Journal on Control and Optimization, Electronic Journal of Statistics
- Conferences: SSVM (2023, 2025)

Dissemination

- Participation to the speed searching event of the European night of researchers 2020
- Contribution to the realization of a radio work for the European night of researchers 2019

Skills

Languages

- French: mother tongue
- English: full professional proficiency (TOEIC 985/990)
- Italian: professional proficiency
- Spanish: notions

Programming

- Languages: Python (PyTorch, JAX), Julia, Lean (beginner)
- Tools: LaTeX, Git, continuous integration (GitHub Actions)
- OS: Linux, Windows