Nathanaël Munier

Contact

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Current Position

Postdoctoral Researcher (Computational MRI)
University of Graz,
Institute of Mathematics & Scientific Computing
Host: Kristian Bredies

Main topics

Inverse problems for imaging and uncertainty quantification.
What can we *reliably* reconstruct when data are missing or distorted?

Education

2022–2025	PhD entitled "Uncertainty quantification for inverse problems" CBI Toulouse (France) — Supervisors: Pierre Weiss, Emmanuel Soubies
2021–2022	Master 2 in Algorithmic, Symbolic Computation and Numerical Optimization University of Limoges (France)
2020–2021	Preparation of the "agrégation" in mathematics ENS Rennes (France) — French competitive exam to teach in university
2019–2020	Master in Pure Mathematics — ENS Rennes (France)
2018–2019	Bachelor's degree in Mathematics — ENS Rennes (France)
2016–2018	Preparatory classes MPSI and MP* Lycée Kléber — Strasbourg (France)
2016	Science baccalaureate with highest honours Lycée Blaise Pascal — Colmar (France)

Research Experience

2022	Master 2 internship on inverse problems INSA Toulouse (France)
2020	Remote internship on sandpile groups of supersingular isogeny graphs Supervised by the Hebrew University of Jerusalem
2019	Internship in algebraic geometry IRMA Strasbourg (France)

References

C. Cazorla, Nathanaël Munier, R. Morin, and Pierre Weiss. Sketchpose: Learning to segment cells with partial annotations. *Machine Learning for Biomedical Analysis*, 2025. URL https://www.melba-journal.org/papers/2025:016.html.

Nathanaël Munier and Ari Shnidman. Sandpile groups of supersingular isogeny graphs. *Journal de Théorie des Nombres de Bordeaux*, 2023. URL https://www.jstor.org/stable/48766118.

Nathanaël Munier, Emmanuel Soubies, and Pierre Weiss. Algorithmes de visualisation de non-identifiabilité. In *GRETSI*, 2023a. URL https://hal.science/hal-04138308.

Nathanaël Munier, Emmanuel Soubies, and Pierre Weiss. The MLE is a reliable source: sharp performance guarantees for localization. *Inverse Problems*, 2023b. URL https://iopscience.iop.org/article/10.1088/1361-6420/ad0dbb.

Nathanaël Munier, Emmanuel Soubies, and Pierre Weiss. Exploring instabilities of inverse problem solvers with low-dimensional manifolds. In *International Conference on Inverse Problems*, 2024. URL https://hal.science/hal-04753218.

Nathanaël Munier, Emmanuel Soubies, and Pierre Weiss. Jackpot: Approximating uncertainty domains with adversarial manifolds. *Journal of Machine Learning Research*, 2025. URL http://www.jmlr.org/papers/v26/24-1769.html.

Talks and Presentations

Aug 2023	GRETSI (oral) gretsi.fr/colloque2023	Grenoble
Sep 2023	30 Years of Math for Optical Imaging (oral) math-image.sciencesconf.org	Marseille
Nov 2023	ANR Microblind Meeting (oral) cirm-math.fr/3065	Marseille
Jan 2024	CBI PhD Students' Day (oral)	Toulouse
Feb 2024	IMT PhD Students' Seminar (oral) indico.math.cnrs.fr/10662	Toulouse
Sep 2024	UQIPI24 (poster) icms.ac.uk/uqipi24	Edinburgh
Sep 2024	MINT Masterclass (oral) occi.math.cnrs.fr/seminma	Toulouse
Mar 2025	IABM 2025 (poster)	Nice
Aug 2025	GRETSI (poster) gretsi.fr/colloque2025	Strasbourg
Oct 2025	Blind Inverse Problems in Imaging (oral) cirm-math.fr/3349	Marseille

Teaching

INSA Toulouse (France)

- **Introduction to Mathematics**: practicals and tutorials (1st year)
- **Probability**: practicals and tutorials (2nd year)
- **PDEs & Fourier Transforms**: practicals and tutorials (3rd year)

- **Remedial courses**: Probability; Linear Algebra; Ordinary Differential Equations (2nd & 3rd year)
- **Group project**: manifold learning (3rd year)

Competitions

2021 — Ranked 13th at mathematics “agrégation”, computer algebra option
2020 — TOEIC: 860 points
2018 — Admitted on a competitive basis to ENS Rennes
2016 — 1st prize in the 44th “Rallye de Mathématiques”
2016 — Awarded in the “Olympiades de la Chimie”
2015 — 3rd prize in the “Olympiades de Mathématiques de première S”