Alessandro Pinzi

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https://alessandropinzi.github.io/



Research interest

- My interests lie between optimal transport and non-smooth geometry. In particular, I am currently working on the following areas: PDEs for random probability measures; gradient flows in metric spaces; Wasserstein gradient flow. I am also interested in possible applications to problems from both statistics and machine learning.

Education

Sep '22 – pres. — **Ph.D. in Statistics and Computer Science, Bocconi University, Milan**
Advisors: *Prof. Giuseppe Savaré and Prof. Dario Trevisan*

Oct '19 – May '22 — **M.Sc. Mathematics, Università di Pisa, Pisa**
Thesis: *Optimal maps in metric measure spaces with Ricci curvature bounded from below*
Supervisor: *Prof. Luigi Ambrosio*
Final grade: *110/110 cum laude*

Sep '16 – Oct '19 — **B.Sc. Mathematics, Università di Pisa, Pisa**
Thesis: *Random optimal transport problems: two and three marginal distributions*
Supervisor: *Prof. Dario Trevisan*
Final grade: *110/110 cum laude*

Teaching

Università di Pisa

2019 — **Counselling**: orientation for University of Pisa, aimed to high school students.

2020-2022 — **Tutoring**: tutor for first year students in 2020; tutor for the bachelor course 'Analisi Matematica 1' in 2020/2021; tutor for the master course 'Istituzioni di Analisi Matematica' in 2021/2022.

Bocconi University

2023-2024 — **TA**: 'Mathematical Analysis 1' (BAI), 'Probability 1' (BAI), 'Elements of Real and Fourier Analysis' (BAI).

2024-2025 — **TA**: 'Mathematical Analysis 1' (BAI), 'Probability' (BAI), 'Mathematical Analysis 2' (BAI), 'Machine Learning (Introduction)' (BIG).
Instructor: 'Probability' (BAI), 'Machine Learning (Introduction)' (BIG).

2025-2026 — **TA**: 'Mathematical Analysis 1' (BAI), 'Algebraic and topological methods' (BAI).
Instructor: 'Probability' (BAI).

Publications

Preprints

- *Totally convex functions, L^2-Optimal transport for laws of random measures, and solution to the Monge problem* - A.P. and Giuseppe Savaré, https://arxiv.org/abs/2509.01768, 2025
- *Nested superposition principle for random measures and the geometry of the Wasserstein on Wasserstein space* - A.P. and Giuseppe Savaré, 2025, https://arxiv.org/abs/2510.07523
- *First order equation on random measures as superposition of weak solutions to the McKean-Vlasov equation* - A.P., 2025, https://arxiv.org/abs/2510.07542
- *A direct method for doubly nonlinear equations via convexification in spaces of measures and duality* - A.P., Filippo Riva and Giuseppe Savaré, 2026, https://arxiv.org/abs/2602.09808
- *Optimal transport between laws of random probability measures and the strict Monge problem* - A.P., 2026, https://arxiv.org/abs/2605.01816

Published papers

- *A study of the metric measure space of probability measures via a purely atomic superposition principle* - A.P., 2026, **Nonlinear Analysis**, https://doi.org/10.1016/j.na.2026.114207

Visiting periods

Pisa	Several visits to Pisa in the period 2023-2026, invited by Dario Trevisan.
Bielefeld	02-04 Dec '25, invited by Michael Röckner.
Graz	07-09 Jan '26, invited by Gudmund Pammer.
Paris	29 Apr-07 May '26, invited by Benoit Bonnet-Weill.
	18-22 May '26, invited by Charles Bertucci.
Toronto	24 Aug-28 Oct '26, hosted and funded from the Fields Institute through the Thematic Program on Optimal Transport in Natural Sciences and Statistics http://www.fields.utoronto.ca/activities/26-27/optimal.

Talks

Invited seminars

28 Nov '24, Pisa	*Continuity equation on random measures and a new superposition principle for the non-local case*. "MAP seminars", University of Pisa.
03 Dec '25, Bielefeld	*Superposition principles on random measures and applications*. "Bielefeld stochastic afternoon", University of Bielefeld.
26 Mar '26, Oberwolfach	*On the geometry of (laws of) random measures*. Given at the workshop 2613 "Flows on measure spaces and applications to machine learning"
30 Apr '26, Paris	*The Wasserstein geometry of random measures through nested superposition principle*. "Seminar of Fédération de Mathématiques CentraleSupélec", Centrale Supelec
04 May '26, Paris	*Optimal transport between laws of random probability measures*. "GT CalVa", Institut Henri Poincaré
12 May '26, Brescia	*Optimal transport: from the classic theory to random measures*. "YoungPeople4Math", Università Cattolica del Sacro Cuore di Brescia, https://sites.google.com/unibs.it/semmat/youngpeople4math2026

Talks (continued)

10 Jun '26, Palermo — *The Wasserstein geometry of random measures*. "The 5th Italian Meeting on Probability and Mathematical Statistics", Contributed Session CS128, https://probabilitypalermo2026.unipa.it/

03 Sep '26, Toronto — *The Wasserstein geometry of random measures*. "Optimal transport seminar in the Thematic Program on Optimal Transport in Natural Sciences and Statistics", Fields Institute, Toronto, Ontario, Canada, https://www2.fields.utoronto.ca/activities/26-27/optimal-transport-seminar (registration available)

10 Sep '26, online — *The Wasserstein geometry of random measures through superposition principles*. "Modeling and Computation Seminars at the University of Arizona", Tucson, Arizona, USA

27 Oct '26, online — *The Wasserstein geometry of random measures through superposition principles*. "Wasserstein Jam", online event, https://averil-aussedat.github.io/hi-you-url-reader/WassersteinJamI.html

Contributed talks

26 Jan '25, Folgarida — *Nested superposition principle: from the continuity equation on random measures to interacting particle systems*. Given at the DolomitesWS25: https://sites.google.com/view/dolomitesws25

13 Oct '25, Lausanne — *On the geometry of (laws of) random measures*. Given at the OTMG2025: https://sites.google.com/view/otmg2025/home (registration available)

9-13 Feb '26, Riccione — *Esistenza di flussi gradienti in spazi di Banach tramite convessificazione nello spazio delle probabilità*. Given at the 35th Italian National Conference on Calculus of Variations: https://sites.google.com/uniroma1.it/cncdv2026/home-page (slides available)

Poster sessions

24-28 Jul '23, UK — *On dynamic Schrödinger bridge and link to the Wasserstein gradient flow of the Fisher information*. "ImperialCollege-Oxford-Bocconi StatML summer school": https://statml.io/index.php/statml-cdt-summer-school-july-2023/

9-13 Jun '25, Como — *Evolution of random measures and non-local continuity equation*. Presented at the summer school "Mathematical Analysis and Applications": https://mmaa.lakecomoschool.org/

Skills

Languages — Italian: mother tongue
English: fluent

Coding — LaTeX: excellent
Matlab, Python: good
Julia: basic