

PERSONAL INFORMATION **Francesca Pieroni**

Nationality Italian

CURRENT POSITION

2022-present **PhD student in Mathematics**

Sapienza University of Rome, Italy

Supervisor: Prof. Emanuele Caglioti

EDUCATION

2020-2022 **Master Degree in Applied Mathematics**

Sapienza University of Rome, Italy

Grade: 110/110 cum laude

Date: October 27, 2022

Thesis title: Assegnamento ottimo aleatorio in dimensione 2 (Optimal random matching in dimension 2)

Advisor: Prof. Emanuele Caglioti

2017-2020 **Bachelor Degree in Mathematics**

Sapienza University of Rome, Italy

Grade: 110/110 cum laude

Date: September 22, 2020

Thesis title: Modello di Kuramoto: il fenomeno della sincronizzazione (Kuramoto's model: the phenomenon of synchronization)

Advisor: Prof. Emanuele Caglioti

2012-2017 **High School Diploma**

Liceo Scientifico Statale Augusto Righi, Rome, Italy

Grade: 100/100

RESEARCH INTERESTS

Optimal Transport, Random Matching, Periodic Lorentz Gas.

PUBLICATIONS

- * Caglioti E. and Pieroni F., Random Matching in 2D with Exponent 2 for Gaussian Densities, *Journal of Statistical Physics* **191**, (2024).

PREPRINTS

- * Boccato C., Pieroni F. and Trevisan D., On distances among Slater Determinant States and Determinantal Point Processes, *arXiv preprint: 2504.08971*, (2025).
- * Pieroni, F., Convergence to the equilibrium for the kinetic transport equation in the two-dimensional periodic Lorentz Gas, *arXiv preprint: 2504.06839*, (2025).
- * Caglioti E., Goldman M., Pieroni F. and Trevisan D., Subadditivity and optimal matching of unbounded samples, *arXiv preprint: 2407.06352*, (2024).

RESEARCH VISITS

- Nov. 4–8, 2024 Visiting Prof. Dario Trevisan, University of Pisa (Italy).
- Apr. 22–26, 2024 Visiting Prof. Michael Goldman, Ecole Polytechnique - CNRS, Paris (France).

TALKS

- Mar. 4, 2025 The Random Euclidean Matching for Gaussian densities, University of Florence (Italy).
 Nov. 7, 2024 Random Euclidean Matching for Gaussian densities, *Seminari MAP*, University of Pisa (Italy).

CONTRIBUTED TALKS

- May 12, 2025 Random Matching per densità Gaussiane (Random Matching for Gaussian densities), *May12 Celebrating Women In Mathematics: "Tracciare connessioni tra le matematiche nel tempo"*, Sapienza University of Rome.
 Apr. 30, 2025 Random Matching Euclideo (Euclidean Random Matching), *Math After Thesis*, Department of Mathematics Guido Castelnuovo, Sapienza University of Rome.
 Nov. 16, 2023 Random Euclidean Matching in dimension 2, *Optimal Transport Theory and Hydrodynamics (from Euler to Monge and vice versa)*, Będlewo Conference Center (Poland).

SCHOOLS AND CONFERENCES

- Sept. 1–6, 2024 Workshop: Quantum Optimal Transport and Applications, *Cortona* (Italy).
 Nov. 12–18, 2023 Oberwolfach Graduate Seminar: Optimal Transport Theory and Hydrodynamics (from Euler to Monge and vice versa), *Będlewo Conference Center* (Poland)
 Sept. 25–29, 2023 Workshop: About Entropy in Large Classical Particle Systems, *Mathematical Institute, University of Oxford* (England).
 Mar. 27–31, 2023 School: Scaling limits and generalized hydrodynamics, *Gran Sasso Science Institute, L'Aquila* (Italy).

FUNDED RESEARCH PROJECTS

- 2024 Project **Progetti dipartimentali**: "New research trends in Mathematics at Castelnuovo". PI: Marcello Ponsiglione. Duration: 36 months. Funded by Sapienza University of Rome.
 2024 Project **Avvio alla Ricerca - Tipo 1**: "Random Matching Euclideo in dimensione $d \geq 2$ e con esponente $p \geq 1$ per densità che decadono esponenzialmente (Random Euclidean Matching in dimension $d \geq 2$ with exponent $p \geq 1$ for exponentially decaying densities)". PI: Francesca Pieroni. Duration: 12 months. Funded by Sapienza University of Rome.
 2024 Galileo Project 2024 **G24-202**: "Variational methods for geometric and optimal matching problems", *University of Pisa* and *CNRS, Ecole Polytechnique*. PI: Matteo Novaga. Duration: 24 months.

SCIENTIFIC AFFILIATIONS

- 2024-present Member of **GNFM - INdAM Gruppo Nazionale per la Fisica Matematica** (National Group for Mathematical Physics), section "Meccanica dei Sistemi Discreti (Mechanics of Discrete Systems)".

EXPERIENCE

- 2025 Member of GEP (Gender Equality Plan), Department of Mathematics "Guido Castelnuovo", Sapienza University of Rome.
 2025 Tutor in Penitentiary Institutions of Rebibbia (Rome) and Terni, in collaboration with Polo Universitario Penitenziario (Penitentiary University Center), Sapienza University of Rome.
 2023 Classroom Tutor, Department of Mathematics "Guido Castelnuovo", Sapienza University of Rome, Course: Geometry I for Bachelor Degree in Mathematics, Channel II, 40 hours.
 2022 Collaboration grant at the Library of Department of Mathematics "Guido Castelnuovo", Sapienza University of Rome, 150 hours.

OTHER ACTIVITIES

- 2022 Participation to "Percorso di Eccellenza (Course of Excellence)" within the Master Degree, Sapienza University of Rome.
 2019-2020 Participation to "Percorso di Eccellenza (Course of Excellence)" within the Bachelor Degree, Sapienza University of Rome.

PERSONAL SKILLS

Mother tongue Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2

Computer skills LaTeX, C++, MatLab, Wolfram Mathematica

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F.to
Francesca Pieroni