

# Matteo Raviola

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## Summary

Applied mathematics PhD student at EPFL working on reduced-order modeling, uncertainty quantification, and optimization for high-dimensional systems; currently Visiting Scholar at the Courant Institute, New York University.

## Education

- Ph.D., Applied Mathematics — EPFL, CSQI Lab. Nov 2022 – present  
Awards: EPFL Doc.Mobility Scholarship  
Advisor: Fabio Nobile
- M.Sc., Applied Mathematics — Politecnico di Torino. Oct 2020 – Oct 2022  
Awards: *cum laude*, ASP scholarship, Erasmus+ scholarship
- B.Sc., Applied Mathematics — Politecnico di Torino. 2017 – 2020  
Awards: *cum laude*

## Research Experience

- Courant Institute, New York University** Sep 2025 – Apr 2026  
*Visiting Scholar in Benjamin Peherstorfer's group.*

## Select Publications

- A Dirac-Frenkel-Onsager principle for nonlinear parametrizations of PDE solutions* **under review** ▪ **ICML 2026**  
M. Raviola, B. Peherstorfer.
- Stochastic gradient with least-squares control variates* **arXiv, 2025**  
F. Nobile, M. Raviola, N. Schaeffer.
- A function approximation algorithm using multilevel active subspaces* **MCQMC 2024**  
F. Nobile, M. Raviola, R. Tempone.
- Network-based kinetic models: Emergence of a statistical description of the graph topology* **EJAM, 2024**  
M. Nurisso, M. Raviola, A. Tosin
- Opinion polarization in social networks* **Phil. Trans. R. Soc. A, 2022**  
N. Loy, M. Raviola, A. Tosin

**Software:** Python · NumPy · JAX · MATLAB · R · Wolfram Language · SLURM · Git · LaTeX

**Service:** Co-organizer, [NUMRAD] summer school, EPFL (2024) · Posters and talks at SIAM UQ, SIAM CSE, MCM, and SWICCOMAS