

# Marta Morandini

AIX-MARSEILLE UNIVERSITÉ - INSTITUT DE NEUROSCIENCES DE LA TIMONE

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## Research

### WRITING

- 2025 **Behind the paper**, Higher-order Laplacian Renormalization
- 2025 **Higher-order Laplacian Renormalization**, M. Nurişso, M. Morandini, M. Lucas, F. Vaccarino, T. Gili, G. Petri *Nat. Phys.*  
**Disentangling individual-level from location-based income uncovers socioeconomic preferential mobility**
- 2024 **and impacts segregation estimates**, M. Duran-Sala, A. Koikkalettu Balachandran, M. Morandini, T. Naushirvanov, A. Prabhakaran, A. Renninger, M. Mazzoli *ArXiv*

### CONFERENCES

- 2024 **Directional functional interactions in brain networks in healthy aging**, poster - BrainModes *Bilbao, Spain*
- 2024 **Growing Older: exploring directional connectivity through fMRI**, poster - PhD days of INT, Centre IRM-INT *Marseille, France*
- 2024 **Higher-order Laplacian Renormalization**, contributing author - NetSciX *Venice, Italy*
- 2023 **Higher-order brain time series improve subject and age fingerprinting**, speaker - NetNeuro, TopoNets(NetSci) *Vienna, Austria*

### WORKSHOPS AND SCHOOLS

- 2024 **EITN Fall School in Computational Neuroscience**, by EBRAINS *Marseille, France*
- 2024 **Complexity72h Workshop**, 5th edition by A. Antonioni, M.A. González Casado, G. Pullano, E. Valdano *Madrid, Spain*
- 2023 **BrainHack Marseille**, project by A. Brovelli and E. Combrisson on higher-order interactions *Marseille, France*

### MEMBERSHIPS AND HONORS

- 2024 - **Pint of Science**, event manager *Marseille*
- 2024 **Best Poster Award**, BrainModes 2024 *Bilbao, Spain*
- 2024 - **Network Science Society**, member
- 2023 - **Complex Systems Society**, member
- 2023 - **Comité de Diversité, d'Équité et de Lutte contre les Discriminations (DELD)**, member *INT, Marseille*
- 2023 **Scholarships for Events on Complex Systems (SECS)**, by yrCSS

## Skills

**Programming Languages** Python, Matlab, R, LaTeX  
Italian, English (fluent), Spanish (intermediate), French (beginner)

## Experience

### CENTAI Institute

*Turin, Italy*

#### INTERNSHIP

2022 - 2023

- Topological Data Analysis, Complex Systems, fMRI data in Giovanni Petri's team (NPL research).

### UniTo

*Turin, Italy*

#### TUTOR

2018 - 2021

- Scuola dei compiti*: maths and physics tutoring for high school students. (2018-2019)
- Matematica e scienza: sostantivi femminili*: workshops about women in maths and economics for high school students. (2021)

## Education

### INT (Institut de Neurosciences de la Timone) - AMU (Aix-Marseille Université)

*Marseille, France*

#### PHD IN COMPUTATIONAL NEUROSCIENCE

2023 - present

- Thesis: *Analysis and modelling of directional interactions in the human brain*. Supervisors: Andrea Brovelli, Matthieu Gilson.

### UniTo (University of Turin)

*Turin, Italy*

#### MASTER'S AND BACHELOR'S DEGREE IN MATHEMATICS

- Master's Thesis: *Topological fingerprints of brain individuality and age*. Supervisors: Federica Galluzzi, Giovanni Petri.
- Bachelor's Thesis: *Elliptic curves and cryptography*. Supervisor: Alberto Albano.