

# MATTEO SAPONATI

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🌐 [matteosaponati.github.io](https://matteosaponati.github.io)

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## Work experience

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- Oct 2023 - present     **Postdoctoral Researcher**  
Institute of Neuroinformatics, ETH/UZH, Zurich (CH)
- Sept 2019 - Oct 2023     **Ph.D. Candidate**  
Ernst Strüngmann Institute for Neuroscience and Max-Planck Institute for Brain Research, Frankfurt Am Main (DE)
- Mar 2019 - Aug 2019     **Assistant Research Scientist**  
Institute des Neurosciences des Systemes Aix-Marseille University, Marseille (FR)
- Jul 2018 - Aug 2018     **Research Intern**  
Barcelona Biomedical Research Park, Barcelona (ESP)

## Education

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- May 2020 - Nov 2023     **Ph.D. in Neurophysics**  
Donders Institute for Brain, Cognition and Behaviour, Radboud University (NL)
- Sep 2016 - Oct 2018     **M.Sc. Degree in Physics**  
110/110 - Department of Physics, University of Pisa (IT)
- Sep 2011 - Jun 2016     **B.Sc. Degree in Physics**  
94/110 - Department of Physics, University of Pisa (IT)

## Research

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### Journal articles

- Saponati, M.**, & Vinck, M. (2023a). Inhibitory feedback enables predictive learning of multiple sequences in neural networks. *bioRxiv*.
- Saponati, M.**, & Vinck, M. (2023b). Sequence anticipation and spike-timing-dependent plasticity emerge from a predictive learning rule. *Nature Communications*, 14(1), 4985.
- Spyropoulos, G., **Saponati, M.**, Dowdall, J. R., Schölvinck, M. L., Bosman, C. A., Lima, B., Peter, A., Onorato, I., Klon-Lipok, J., Roese, R., et al. (2022). Spontaneous variability in gamma dynamics described by a damped harmonic oscillator driven by noise. *Nature Communications*, 13(1), 1–18.
- Saponati, M.**, Garcia-Ojalvo, J., Cataldo, E., & Mazzoni, A. (2022). Thalamocortical spectral transmission relies on balanced input strengths. *Brain Topography*, 35(1), 4–18.
- Saponati, M.**, Garcia-Ojalvo, J., Cataldo, E., & Mazzoni, A. (2019). Integrate-and-fire network model of activity propagation from thalamus to cortex. *Biosystems*, 183, 103978.

## Conference presentations and proceedings

- 2023 **Cosyne Conference (Montreal, CA)**  
Poster: "A predictive plasticity rule entails the anticipation of multiple spike sequences"
- 2022 **Society for Neuroscience Meeting (San Diego, USA)**  
Poster: "A predictive plasticity rule explains the anticipation of spike patterns at the single neuron level and the emergence of spike-timing-dependent plasticity mechanisms"
- 2022 **Bernstein Conference (Berlin, DE)**  
Poster: "V1 classical receptive field response is shaped by the spatio-temporal properties of the input"
- 2021 **Neuromatch Conference (online)**  
Poster: "Sequence anticipation and STDP emerge from a predictive learning rule"
- 2021 **SNUFA Workshop (online)**  
Poster: "Sequence anticipation and STDP emerge from a predictive learning rule"
- 2021 **Champalimaud Research Symposium (Lisbon, PT)**  
Poster: "Sequence anticipation and STDP emerge from a predictive learning rule"

## Grants, Prizes, and Awards

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- Mar 2023 **Cosyne Presenters Travel Grant - 1000 USD**  
Cosyne Conference 2023 (Montreal, CA)
- Sep 2019 - Sep 2023 **PhD Research Fellowship - 35000 EUR (estimate)**  
International Max Planck Research School (IMPRS) for Neural Circuits, MPI for Brain Research, Frankfurt am Main (DE)
- Jul 2018 - 2018 **Erasmus+ Grant - 700 EUR**  
Erasmus program (EU)

## Teaching experience

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- Apr-May 2023 **Workshop Teacher**  
Radboud University, Nijmegen (NL)
- Jul 2022 **Teaching Assistant**  
Neuromatch Academy, Deep Learning (online)
- Sep 2021 **Scientific Workshop Teacher**  
GRADE Brain, Goethe University Frankfurt am Main (DE)
- Nov 2017 - Mar 2018 **Teaching Assistant**  
Department of Physics, University of Pisa (IT)

## Skills

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- Language Skills** Italian (Mother tongue), English (Fluent), Portuguese (Conversational)
- Coding Skills** Python, PyTorch, Matlab, C++, LaTeX, Adobe Illustrator, Music production DAWs
- Research Skills** Mathematical Modelling, Data Analysis, Critical Thinking, Teamwork, Public Speaking, problem Solving

## Miscellaneous

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- Music experience** I play guitar and drums. I have years' experience in playing music with bands, composing and playing original tracks. I love to participate to music jam sessions. I have experience in producing original music.
- Sound tech experience** I have experience in working as a sound technician in pubs. I organized live music events.
- Scientific seminars** I have co-organized scientific seminars and talks.