

## Francesca Mastrogiuseppe

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**Webpage – Google Scholar – Github**

### EDUCATION

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| <b>PhD</b> in Theoretical Neuroscience<br>École Normale Supérieure, Paris  | 2017 |
| <b>Master</b> in Theoretical Physics of Complex Systems, double degree: <ul style="list-style-type: none"><li>• Politecnico di Torino, SISSA and ICTP Trieste, result: 110/110 <i>cum laude</i></li><li>• Universités Paris 6, 7, 11, École Normale Supérieure Saclay, mention: <i>très bien</i></li></ul> | 2014 |
| <b>Bachelor</b> in Physics<br>University of Bologna, result: 110/110 <i>cum laude</i>  | 2012 |

### RESEARCH

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| <b>Post-doctoral</b> fellow<br>Gatsby Computational Neuroscience Unit, University College London<br>(advisor: P. Latham) | 2018 - present |
| <b>PhD</b> research student<br>Group for Neural Theory, École Normale Supérieure, Paris<br>(advisor: S. Ostojic)         | 2014 - 2018    |
| <b>Master</b> research student<br>Unité Physico-Chimie, Institut Curie, Paris<br>(advisors: H. Isambert, R. Zecchina)    | 2014           |

### INTENSIVE COURSES

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|   |      |
|---|------|
| • Cajal Course in Computational Neuroscience (Lisbon) | 2016 |
| • Methods in Computational Neuroscience (Woods Hole)  | 2015 |
| • Physics of Complex Systems Spring School (Trieste)  | 2014 |

### INVITED TALKS

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| Seminar at SISSA Data Science (Trieste)                          | 2021 |
| Simons-Emory workshop on Computations through Dynamics (Atlanta) | 2020 |
| Physics of the Brain workshop (York)                             | 2020 |
| Seminar at Saxe Lab Meeting (Oxford)                             | 2020 |
| Workshop of Bernstein Conference (Berlin)                        | 2020 |
| Seminar at IDIBAPS (Barcelona)                                   | 2020 |
| Columbia Grossman Center Workshop (Aspen)                        | 2019 |
| Workshop of Bernstein Conference (Berlin)                        | 2019 |

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| Workshop of Cosyne Conference (Lisbon)                           | 2019 |
| Workshop of Bernstein Conference (Berlin)                        | 2018 |
| INSPIRE Neural Dynamics workshop (Cergy)                         | 2018 |
| Mean-field approaches for neural networks workshop, EITN (Paris) | 2018 |
| Seminar at EPFL (Lausanne)                                       | 2017 |

## CONTRIBUTED TALKS

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|   |      |
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| Gatsby tri-center meeting (London)                              | 2019 |
| International Conference of Mathematical Neuroscience (Boulder) | 2017 |
| Cosyne Conference (Salt Lake City) - top 5% submission          | 2017 |

## POSTER PRESENTATIONS

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|   |      |
|---|------|
| Cosyne Conference (Denver)                          | 2020 |
| Neural Coding, Computation and Dynamics (Capbreton) | 2019 |
| Neural networks: from brains to machines (Paris)    | 2018 |
| Bernstein Conference (Berlin)                       | 2018 |
| Cosyne Conference (Denver)                          | 2018 |
| Cosyne Conference (Salt Lake City)                  | 2016 |
| Neural Coding, Computation and Dynamics (Bilbao)    | 2015 |

## PUBLICATIONS

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- L. Susman\*, F. Mastrogiuseppe\*, N. Brenner and O. Barak, “*Quality of internal representation shapes learning performance in feedback neural networks*”, arXiv:2011.06066, under review (2020)
- F. Schuessler, F. Mastrogiuseppe, A. Dubreuil, S. Ostojic and O. Barak, “*The interplay between randomness and structure during learning in RNNs*”, NeurIPS (2020) - top 1% submission, selected for oral presentation
- M. Beiran, A. Dubreuil, A. Valente, F. Mastrogiuseppe and S. Ostojic, “*Shaping dynamics with multiple populations in low-rank recurrent networks*”, accepted at Neural Computation (2020)
- A. Dubreuil, A. Valente, M. Beiran, F. Mastrogiuseppe and S. Ostojic, “*Complementary roles of dimensionality and population structure in neural computations*”, arXiv:2007.02062, under review (2020)
- F. Schuessler, A. Dubreuil, F. Mastrogiuseppe, S. Ostojic and O. Barak, “*Dynamics of random recurrent networks with correlated low-rank structure*”, Physical Review Research 2(1) 013111 (2020) - editor’s choice
- A. Dubreuil, A. Valente, F. Mastrogiuseppe and S. Ostojic, “*Disentangling the roles of dimensionality and cell classes in neural computations*”, NeurIPS workshop Real Neurons and Hidden Units (2019)
- F. Mastrogiuseppe and S. Ostojic, “*A geometrical description of global dynamics in trained networks*”, Neural Computation 31(6) 1139-1182 (2019)
- F. Mastrogiuseppe and S. Ostojic, “*Linking connectivity, dynamics and computations in low-rank recurrent neural networks*”, Neuron 99(3) 609 - 623 (2018)
- F. Mastrogiuseppe and S. Ostojic, “*Intrinsically generated fluctuations in excitatory-inhibitory networks*”, PLOS Computational Biology 13(4) e1005498 (2017) - top 10% most cited papers

\* = equal contribution, listed in random order

## TEACHING

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|   |      |
|---|------|
| • Cosyne Conference Tutorial, teaching assistant  | 2021 |
| • Theoretical Neuroscience course, guest lecturer<br>(Graduate program, Gatsby Computational Neuroscience Unit)                 | 2020 |
| • Advanced Theoretical Neuroscience course, teaching assistant<br>(Master of Cognitive Science, École Normale Supérieure Paris) | 2018 |
| • Theoretical Modelling practical course, lecturer  | 2017 |
| • Theoretical Modelling practical course, lecturer  | 2016 |
| • Theoretical Modelling practical course, lecturer<br>(Master of Cognitive Science, École Normale Supérieure Paris)             | 2015 |

## MENTORING

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| Supervisor of two undergraduate students from PSL and Sorbonne University | 2016-2018 |
| Supervisor of a graduate student from École de Neurosciences de Paris     | 2016      |

## OUTREACH

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| Guest scientist for the Computational Neuroscience course<br>(Master in Psychology and Computer Science, Goldsmiths University of London) | 2021 |
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## PROFESSIONAL SERVICE

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| • Reviewer for PLOS Computational Biology, Physical Review X, Physical Review E, Cosyne Conference<br>(2019 - 2020 - 2021) |           |
| • Organiser of Gatsby Unit External Seminar Series   | 2020      |
| • Organiser of Gatsby Unit Theoretical Neuroscience Journal Club   | 2019-2020 |
| • Member of the Faculty Search committee for Theoretical Neuroscience at Gatsby Unit                                       | 2019      |
| • Member of SWC/Gatsby self-assessment committee for Athena SWAN equality award  | 2020      |

## AWARDS AND GRANTS

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| Travel grant: International Conference of Mathematical Neuroscience | 2017 |
| Travel grant: Cosyne Conference                                     | 2016 |
| Travel grant: Neural Coding, Computation and Dynamics               | 2015 |
| Travel grant: Marine Biological Laboratory, Woods Hole              | 2015 |
| PhD scholarship from the École Doctorale Physique en Ile de France  | 2014 |
| Merit scholarship from Université Paris Saclay                      | 2013 |
| Merit award from University of Bologna for best ranked students     | 2012 |

## TECHNICAL STRENGTHS

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| <b>Programming<br/>Languages</b> | C/C++, Python, R, MATLAB, Fortran, Mathematica, L <sup>A</sup> T <sub>E</sub> X<br>Italian (native), English (fluent), French (fluent) |
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