

Giorgio NICOLETTI



PERSONAL DATA

PLACE AND DATE OF BIRTH: Dolo, Italy | 9th July 1995
ADDRESS: Department of Physics and Astronomy "Galileo Galilei"
Room 382
Via Francesco Marzolo 8, 35131 Padova, Italy
PHONE: +39 333 6751887
PERSONAL WEBSITE: giorgionicoletti.github.io
EMAIL: giorgio.nicoletti.1@phd.unipd.it

EDUCATION

OCT 2019 - PRESENT



PhD in PHYSICS

Laboratory of Interdisciplinary Physics, **University of Padova**

Supervisor: Prof. AMOS MARITAN

Co-supervisor: Prof. SAMIR SUWEIS

OCT 2017 - JULY 2019



Master's Degree in PHYSICS

University of Padova, Padova

Thesis: *Scaling and renormalization group for models of neural activity.*

Advisor: Prof. AMOS MARITAN

Co-Advisor: Prof. SAMIR SUWEIS

FINAL GRADE: 110/110 *cum laude*

GPA: 29.93/30

SEPT 2018 - FEB 2019



Erasmus semester

INTERNATIONAL MASTER IN PHYSICS OF COMPLEX SYSTEM, **Sorbonne University**, Paris Diderot University, Paris-Sud University, Paris

ECTS GPA: A/A

OCT 2014 - JULY 2017



Bachelor's Degree in PHYSICS

University of Padova, Padova

Thesis: *Quantum Mechanics and de Finetti theorem. A Bayesian interpretation of quantum probability.*

Advisor: Prof. PIERALBERTO MARCHETTI

FINAL GRADE: 110/110 *cum laude*

GPA: 29.19/30

SEPT 2009 - JULY 2014

High school diploma, Liceo Scientifico "U. Morin", Venice

Final essay: *The emergent universe. Beyond mechanicism: does something fundamental exist?*

FINAL GRADE: 100/100 *cum laude*

PUBLICATIONS & PREPRINTS

ARXIV 2204.01644 (2022)	Giorgio Nicoletti, Daniel M. Busiello. Mutual information in changing environments: non-linear interactions, out-of-equilibrium systems, and continuously-varying diffusivities.
ARXIV 2202.11067 (2022)	Giorgio Nicoletti, Amos Maritan, Daniel M. Busiello. Information-driven transitions in projections of underdamped dynamics.
BIORXIV 2022.01.17.476567 (2022)	Giacomo Barzon, Giorgio Nicoletti, Benedetta Mariani, Marco Formentin, Samir Suweis. Criticality and network structure drive emergent oscillations in a stochastic whole-brain model.
PHYS. REV. LETT. 127, 228301 (2021)	Giorgio Nicoletti, Daniel M. Busiello. Mutual information disentangles interactions from changing environments. <i>Selected as Editors' Suggestion and for a viewpoint in "Physics".</i>
ARXIV 2110.10014 (2021)	Giorgio Nicoletti, Leonardo Saravia, Ferdinando Momo, Samir Suweis. The emergence of scale-free fire outbreaks in Australia.
FRONT. SYST. NEUROSCIENCE 15:709677 (2021)	Benedetta Mariani, Giorgio Nicoletti, Marta Bisio, Marta Maschietto, Oboe Roberto, Alessandro Leparulo, Samir Suweis, Stefano Vassanelli. Neuronal avalanches across the rat somatosensory barrel cortex and the effect of single whisker stimulation.
ARXIV 2105.05070 (2021)	Benedetta Mariani, Giorgio Nicoletti, Marta Bisio, Marta Maschietto, Stefano Vassanelli, Samir Suweis. On the critical signatures of neural activity.
PHYS. REV. RESEARCH 2, 023144 (2020)	Giorgio Nicoletti, Samir Suweis, Amos Maritan. Scaling and criticality in a phenomenological renormalization group.

INVITED TALKS

10 TH MAR 2022	Young Seminars of the Italian Society of Statistical Physics , online. INVITED TALK: <i>Unfolding complex systems with Information Theory.</i>
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CONTRIBUTED TALKS AND POSTERS

25 TH - 29 TH OCT 2021 CONFERENCE	Conference on Complex Systems 2021 , Lyon, France. CONTRIBUTED TALK: <i>Disentangling the role of external and intrinsic dynamics on the critical signatures of neural activity.</i> CONTRIBUTED TALK: <i>Modeling the emergence of scale-free fire outbreaks in Australia.</i> CONTRIBUTED POSTER: <i>Disentangling internal interactions from noisy environments through mutual information.</i>
22 ND - 25 TH JUNE 2021 CONFERENCE	Stochastic Models and Experiments in Ecology and Biology 2021 , ECLT, Venice, Italy. CONTRIBUTED POSTER: <i>Modeling the emergence of scale-free fire outbreaks in Australia.</i>

- 6TH - 9TH OCT 2020 **Brain Criticality Virtual Meeting**, sponsored by the Brain Initiative and the Marie Skłodowska-Curie Actions.
CONFERENCED **CONTRIBUTED POSTER:** *What can a phenomenological Renormalization Group teach us about criticality in a network of neurons?*
- 29TH SEPT 2020 **Bernstein Conference 2020**, organized by the Bernstein Network.
 1ST OCT 2020 **CONFERENCED** **CONTRIBUTED POSTER:** *Scaling and criticality in a phenomenological renormalization group.*
- 1ST - 3RD JULY 2019 **First Italian Conference on Complex Systems**, Bruno Kessler Foundation, Trento.
CONFERENCED **CONTRIBUTED POSTER:** *Scaling and Renormalization Group for the activity of neurons.*

ORGANIZED CONFERENCES

- 27TH OCT 2021 **Robustness, Adaptability and Critical Transitions in Living Systems**
SATELLITE **Satellite** held at the Conference on Complex Systems 2021, Lyon, France. Main organizer.

ATTENDED SCHOOLS AND WORKSHOPS

- 24TH - 28TH JAN 2022 **Winter Workshop on Complex Systems 2022**, Arc-et-Senans, France.
WORKSHOP
- 30TH MAY 2021 **The Beg Rohu Summer School “Statistical Mechanics and Emergent Phenomena in Biology”**, Beg Rohu, Saint Pierre Quiberon, France.
 12TH JUNE 2021 **SCHOOL**
- 30TH NOV 2020 **Winter School on Quantitative Systems Biology**, organized by the International Center for Theoretical Physics, Italy, online.
 18TH DEC 2020 **SCHOOL**
- 29TH JUNE **Youth in High Dimensions: Machine Learning, High Dimensional Statistics and Inference for the New Generation**, organized by the International Center for Theoretical Physics, Italy, online.
 3RD JULY 2020 **WORKSHOP**
- 9TH - 16TH SEPT 2019 **Computational and Theoretical Models in Neuroscience Summer School**, Venice, Italy.
SCHOOL **WORKING GROUP PROJECT:** “Spiking models of metastable activity: theory and applications” with prof. Luca Mazzucato, University of Oregon.

TEACHING EXPERIENCE AND STUDENT SUPERVISION

- 2021/22 **Co-supervisor of one master’s thesis. Supervision of two students research projects, Master’s Degree in Physics of Data, University of Padova.**
SUPERVISION
- 2021/22, 1ST SEMESTER **Models of Theoretical Physics, Master’s Degree in Physics of Data, University of Padova. Teaching assistant (20 hours).**
TEACHING

2021/22, 1 ST SEMESTER TEACHING	IT and Bioinformatics , Bachelor's Degree in Molecular Biology, University of Padova. <i>Teaching assistant (20 hours) for the Python programming language.</i>
2020/21, 1 ST SEMESTER TEACHING	IT and Bioinformatics , Bachelor's Degree in Biology, University of Padova. <i>Teaching assistant (21 hours) for the Python programming language.</i>
21 ST - 30 TH OCT 2020 ATTENDED WORKSHOP	Innovative University Teaching and Learning Physics , University of Padova.

SERVICE AND MEMBERSHIPS

2021 - PRESENT	Member of the Complex Systems Society .
2021 - PRESENT	Elected representative in the PhD Program Committee and in the Academic Board of the PhD program , Department of Physics and Astronomy, University of Padova.

HONORS AND AWARDS

20 TH DEC 2021	Winner of the SECS grant , funded by the <i>Young Researchers in Complex Systems Society</i> .
22 ND NOV 2021	Physical Review Letters Editors' Suggestion, viewpoint in "Physics" magazine and highlight in PRL's weekly tip sheet for reporters for the paper <i>Mutual information disentangles interactions from changing environments</i> , Phys. Rev. Lett. 127, 228301 (2021).
25 TH JUNE 2021	Best Poster Award for the poster "Modeling the emergence of scale-free fire outbreaks in Australia" at <i>Stochastic Models and Experiments in Ecology and Biology 2021</i> , ECLT, Venice, Italy. Sponsored by MDPI .
2020	Graduate Alumni Award for the best students who graduated in the academic year 2018/2019, University of Padova .
FEB 2017	Winner of the grant for the best students of scientific first cycle degrees, granted by University of Padova .
10 TH OCT 2014	Winner of the award for the high school students with the highest final grade and honors, granted by MIUR , the Italian Ministry for Education, University and Research.

IT SKILLS

ADVANCED KNOWLEDGE	Python
GOOD KNOWLEDGE	Mathematica, \LaTeX
BASIC KNOWLEDGE	C++, ROOT, Matlab, LINUX, HTML, CSS

2020 - PRESENT Web curator and administrator of the website of the Laboratory of Interdisciplinary Physics, University of Padova, and of the related academic initiatives (workshops, conferences, etc.).

LANGUAGES

ITALIAN: Native.
ENGLISH: Fluent, C1 level per the Cambridge English assessment.
FRENCH: Intermediate knowledge, B1-B2 level per the Erasmus OLS language assessment.