

# Giorgio NICOLETTI



## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Dolo, Italy | 9<sup>th</sup> July 1995  
ADDRESS: Department of Physics and Astronomy "Galileo Galilei"  
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## EDUCATION

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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 mechanism: does something fundamental exist?*

FINAL GRADE: 100/100 *cum laude*

## PUBLICATIONS

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<b>In preparation (2021)</b>	Giorgio Nicoletti, Leonardo Saravia, Samir Suweis. <i>Modeling the emergence of scale-free fire outbreaks in Australia.</i>
<b>ARXIV</b> 2107.08985 (2021)	Giorgio Nicoletti, Daniel M. Busiello. <i>Mutual information disentangles interactions from changing environments.</i>
<b>ARXIV</b> 2105.05070 (2021)	Benedetta Mariani, Giorgio Nicoletti, Marta Bisio, Marta Maschietto, Stefano Vassanelli, Samir Suweis. <i>On the critical signatures of neural activity.</i>
<b>BIORXIV</b> 2021.05.13.444047 (2021)	Benedetta Mariani, Giorgio Nicoletti, Marta Bisio, Marta Maschietto, Samir Suweis, Stefano Vassanelli. <i>Beyond resting state neuronal avalanches in the somatosensory barrel cortex.</i>
<b>PHYS. REV. RESEARCH</b> 2, 023144 (2020)	Giorgio Nicoletti, Samir Suweis, Amos Maritan. <i>Scaling and criticality in a phenomenological renormalization group.</i>

## CONTRIBUTED TALKS AND POSTERS

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<b>25<sup>TH</sup> - 29<sup>TH</sup> OCT 2021</b> <b>CONFERENCE</b>	<b>Conference on Complex Systems 2021</b> , Lyon, France. <b>CONTRIBUTED TALK:</b> <i>Modeling the emergence of scale-free fire outbreaks in Australia.</i> <b>CONTRIBUTED POSTER:</b> <i>Disentangling internal interactions from noisy environments through mutual information.</i>
<b>22<sup>ND</sup> - 25<sup>TH</sup> JUNE 2021</b> <b>CONFERENCE</b>	<b>Stochastic Models and Experiments in Ecology and Biology</b> , ECLT, Venice, Italy. <b>CONTRIBUTED POSTER:</b> <i>Modeling the emergence of scale-free fire outbreaks in Australia.</i>
<b>6<sup>TH</sup> - 9<sup>TH</sup> OCT 2020</b> <b>CONFERENCE</b>	<b>Brain Criticality Virtual Meeting</b> , sponsored by the Brain Initiative and the Marie Skłodowska-Curie Actions. <b>CONTRIBUTED POSTER:</b> <i>What can a phenomenological Renormalization Group teach us about criticality in a network of neurons?</i>
<b>29<sup>TH</sup> SEPT 2020</b> <b>1<sup>ST</sup> OCT 2020</b> <b>CONFERENCE</b>	<b>Bernstein Conference 2020</b> , organized by the Bernstein Network. <b>CONTRIBUTED POSTER:</b> <i>Scaling and criticality in a phenomenological renormalization group</i> , <a href="http://doi.org/10.12751/nncn.bc2020.0168">http://doi.org/10.12751/nncn.bc2020.0168</a> . <b>CONTRIBUTED POSTER:</b> <i>Brain criticality beyond resting state neuronal avalanches</i> , <a href="http://doi.org/10.12751/nncn.bc2020.0222">http://doi.org/10.12751/nncn.bc2020.0222</a> .
<b>16<sup>TH</sup> - 18<sup>TH</sup> JAN 2020</b> <b>WORKSHOP</b>	<b>LiphLab Winter Workshop 2020</b> , Folgaria, Italy. <b>MAIN PRESENTATION:</b> <i>Testing the critical brain hypothesis using a phenomenological renormalization group.</i>
<b>1<sup>ST</sup> - 3<sup>RD</sup> JULY 2019</b> <b>CONFERENCE</b>	<b>First Italian Conference on Complex Systems</b> , Bruno Kessler Foundation, Trento. <b>CONTRIBUTED POSTER:</b> <i>Scaling and Renormalization Group for the activity of neurons.</i>

## ORGANIZED CONFERENCES

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- 27<sup>TH</sup> OCT 2021 **Robustness, Adaptability and Critical Transitions in Living Systems**  
**SATELLITE** **Satellite** held at the Conference on Complex Systems 2021, Lyon, France.  
Member of the Organizing Committee and member of the Program Committee.

## ATTENDED CONFERENCES, SCHOOLS AND WORKSHOPS

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- 30<sup>TH</sup> May 2021 **The Beg Rohu Summer School “Statistical Mechanics and Emergent Phenomena in Biology”,** Beg Rohu, Saint Pierre Quiberon, France.  
12<sup>TH</sup> JUNE 2021 **SCHOOL**
- 25<sup>TH</sup> - 28<sup>TH</sup> MAY 2021 **Brain Connectivity Workshop,** online.  
**CONFERENCE**
- 30<sup>TH</sup> November 2020 **Winter School on Quantitative Systems Biology: Quantitative Approaches in Ecosystem,** organized by the International Center for Theoretical Physics, Italy, online.  
18<sup>TH</sup> DECEMBER 2020 **SCHOOL**
- 18<sup>TH</sup> - 19<sup>TH</sup> Nov 2020 **Physics of Brains,** organized by PoLNET, online.  
**WORKSHOP**
- 24<sup>TH</sup> SEPT 2020 **Virtual Workshop on the Role of Quantitative Theory in Biological Physics,** organized by Emory College, United States, online.  
**WORKSHOP**
- 18<sup>TH</sup> - 23<sup>RD</sup> JULY 2020 **29th Annual Computational Neuroscience Meeting,** organized by the Organization for Computational Neuroscience, online.  
**CONFERENCE**
- 29<sup>TH</sup> 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.  
3<sup>RD</sup> JULY 2020 **WORKSHOP**
- 4<sup>TH</sup> JUNE 2020 **Learning Physics with Machine Learning Virtual Workshop,** organized by Emory College, United States, online.  
**WORKSHOP**
- 30<sup>TH</sup> APR 2020 **Physics of Behavior Virtual Workshop,** organized by Emory College, United States, online.  
**WORKSHOP**
- 9<sup>TH</sup> - 16<sup>TH</sup> 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

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- 2020/21, 1<sup>ST</sup> SEMESTER **IT and Bioinformatics,** Bachelor’s Degree in Biology, University of Padova.  
**TEACHING**  
*Teaching assistant (21 hours) for the Python programming language.*

21<sup>ST</sup> - 30<sup>TH</sup> OCT 2020 **Innovative University Teaching and Learning Physics**, University of Padova.  
**ATTENDED WORKSHOP**

## SERVICE AND MEMBERSHIPS

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2021 - PRESENT Reviewer for PLOS COMPUTATIONAL BIOLOGY.

ACADEMIC YEAR 2020/21 Elected representative in the **PhD Program Committee**, Department of Physics and Astronomy, University of Padova.

ACADEMIC YEAR 2020/21 Elected representative in the **Academic Board of the PhD program**, Department of Physics and Astronomy, University of Padova.

## HONORS AND AWARDS

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2020 Graduate Alumni Award for the best students who graduated in the academic year 2018/2019, **University of Padova**.

15<sup>TH</sup> JULY 2019 First student to graduate in the Master of Science in Physics, **University of Padova**.

FEBRUARY 2017 Winner of the grant for the best students of scientific first cycle degrees, granted by **University of Padova**.

10<sup>TH</sup> 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

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ADVANCED KNOWLEDGE Python

GOOD KNOWLEDGE Mathematica, ~~TEX~~ L<sup>A</sup>T<sub>E</sub>X

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

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ITALIAN: Native.

ENGLISH: Fluent, C1 level per the Cambridge English assessment.

FRENCH: Intermediate knowledge, B1-B2 level per the Erasmus OLS language assessment.