paolobarucca

statistical physicist

about

Roma, 27
@ Scuola Normale Superiore
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languages

english C1 level
french/spanish/german A1 level

programming

C/C++
HTML, an example
Matlab
Mathematica
Python

web profile

my website
@asymfree

interests

disordered and complex systems, complex networks, social interactions, brain networks, macroeconomics, financial markets, game theory, philosophy, science communication

education

2011-2014 **Ph.D.** in Theoretical Physics — La Sapienza Uni.
Heterogeneities in disordered systems
Advisors: Prof. G. Parisi - Dott. T. Rizzo

August 2014 **Cargese Summer School** — MIUR - CNRS
Spin Glasses: an old tool for new problems
Organiser: Prof. F. Krzakala

Dec. 2013 **Programming Course** in High Performance Computing (HPC) — CINECA
Scientific calculus in C++

June 2013 **Beg Rohu Summer School** — ITPS - CNRS
Disordered Systems
Organiser: Prof. G. Biroli

2009–2011 **M.Sc. in Theoretical Physics magna cum laude** — La Sapienza Uni.
Large networks of individually bistable populations of neurons
Advisors: Prof. G. Parisi - Prof. P. Del Giudice
Selected Lectures of Specialization:

- Condensed matter *Prof. Calvani 30L/30*
- Neural networks *Prof. Parisi 30L/30*
- Analytical mechanics *Prof. Marchioro 30/30*
- Dynamical systems *Prof. Vulpiani 30/30*
- Modeling neural networks *Prof. Tirozzi 30L/30*
- Statistical mechanics and critical phenomena *Prof. Di Castro 30/30*

2006–2009 **B.Sc. in Physics magna cum laude** — La Sapienza Uni.
Physiological artefacts removal in functional connectivity studies
Advisors: Prof. B. Maraviglia - Dott. T. Gili

teaching activity

2013-2014 **La Sapienza University** Mathematics course for biological sciences — Teacher

2011-2012 **Pallai Private School** Physics course for medical school — Teacher

research activity

2014-present **Systemic risk in financial markets across time-scales** Fellowship
Statistical physics methods applied to interbank networks
Scuola Normale Superiore di Pisa project (Principal investigator: Prof. F. Lillo)

2013 **Start To Research** Grant
Spontaneous fluctuations dynamics in modular architectures of neurons
Call for young researchers and PhD students from MIUR (Ministry of Education, Universities and Research)

2013-2014 **Cripherasy** Collaborator
Critical Phenomena in Random Systems
ERC project (Principal investigator: Prof. Giorgio Parisi)

2011 **Enrico Persico** Fellowship
Call for Physics graduate students from Accademia dei Lincei

works and publications

2015 *Core-periphery structure, centrality and localization in large sparse and heterogeneous networks* In preparation
PB, D. Tantari, F. Lillo

2015 *Disentangling bipartite and core-periphery structure in networks* Accepted by IEEE
PB, F. Lillo

2015 *Cross correlations of the American baby names* pnas.1507143112
PB, J. Rocchi, E. Marinari, G. Parisi, F. Ricci-Tersenghi

2014 *Localization in covariance matrices of coupled heterogenous Ornstein-Uhlenbeck processes* PhysRevE.90.062129
PB

2014 *Temperature chaos and quenched heterogeneities* PhysRevE.89.032129
PB, G. Parisi, T.Rizzo

2011 *A graph theory approach to study the effect of cognitive load on resting state networks*, ISMRM FCAnalysis
T. Gili, PB, F. De Santis

conferences and workshops

2015 1-5 June, Zaragoza, Spain *NetSci15: International School and Conference on Network Science*
WTCZ

2015 8-9 June, London, UK *Statistical Mechanics of Glassy, Complex and Non-Equilibrium Systems*
KCL

2014 9-12 September, Capri, Italia *Critical Phenomena in Random and Complex Systems*
Villa Orlandi

2013 22-26 July, Seoul, Korea *StatPhys25: International Conference on Statistical Physics*
Seoul National University

2012 14-15 December, London, UK *VIII Brunel-Bielefeld Workshop: Random Matrix Theory*
Brunel Uni.