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Gabriele Sicuro

CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	SICURO
NOME	GABRIELE
DATA DI NASCITA	10/04/1987

Research experience

Since Jan. 2020

Post-doctoral researcher, École Normale Supérieure, Paris. Group leader: Florent Krzakala

Jan. 2017 – Dec. 2019

Post-doctoral researcher, Sapienza University of Rome, Rome, Project: Simons Collaboration on Cracking the Glass Problem, funded by the Simons Foundation. Group leader: Giorgio Parisi

Feb. 2015 – Dec. 2016

Post-doctoral researcher, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Project: Foundation of Complexity, funded by the John Templeton Foundation. Group leader: Constantino Tsallis

Education

2012 – 2015

Ph.D. in Physics, University of Pisa, Pisa. Qualification obtained the 15/01/2015.

Ph.D. thesis: The Euclidean Matching Problem

Supervisor prof. Sergio Caracciolo (University of Milan)

We studied the Euclidean Matching Problem, a combinatorial optimization problem, with different techniques borrowed from Measure Theory, Probability Theory and Statistical Physics. Selected and published by Springer in the Springer theses collection, ISBN 978-3-319-46577-7 (2017).

2009 – 2011

M.Sc. in Physics, University of Salento, Lecce, 110/110 cum laude. Average grade: 30.0/30. Thesis: Simmetrie di equazioni di evoluzione alle derivate frazionarie
Supervisors prof. Rosario Antonio Leo (University of Salento), prof. Piergiulio Tempesta (Universidad Complutense de Madrid)

2006 – 2009

B.Sc. in Physics, University of Salento, Lecce, 110/110 cum laude. Average grade: 29.9/30. Thesis: Simmetrie di Lie di equazioni di evoluzione ed applicazione all'equazione di Fokker-Planck
Supervisors prof. Rosario Antonio Leo (University of Salento), prof. Piergiulio Tempesta (Universidad Complutense de Madrid)

2006 – 2009

Maturità scientifica, Liceo Scientifico “G.C. Vanini”, Casarano, 100/100.

Qualifications

- 2020–2024
Qualification as “Maître de conférences”, France, 26 – Mathématiques appliquées et applications des mathématiques. (Applied mathematics)
- 2020–2024
Qualification as “Maître de conférences”, France, 28 - Milieux denses et matériaux. (Condensed matter)
- 2020–2029
Abilitazione scientifica nazionale italiana per Seconda Fascia, settore concorsuale 01/A4, SSD MAT/07 Fisica matematica.

Schools

- Statistical physics and machine learning back together, Institut d'études scientifiques de Cargèse, Cargèse (France), poster presented (20 August–31 August 2018).
- Statistical Field Theories Lectures, GGI, Florence (Italy) (3 February–14 February 2014).
- Summer school on Disordered System organized by the CEA of Saclay, Beg Rohu Summer School, St Pierre Quiberon (France).
- 3 June–15 June 2013: Period of training within the PhD course in Statistical Physics, ISAS – SISSA, Trieste. I attended courses on CFT and disordered systems as complements to my graduate studies.
- International School on Complex Systems, ISAS – SISSA, Trieste (2012).

Teaching

2019/2020

Teaching assistant, Sapienza University of Rome, Rome, “Laboratorio di Fisica Computazionale”.

Introductory course in computational physics (30 hours).

2017/2018

Teaching assistant, Sapienza University of Rome, Rome, “Laboratorio di Fisica Computazionale”.

Introductory course in computational physics for the Bachelor course in Physics (30 hours).

2013/2014

Teaching assistant, University of Pisa, Pisa, “Struttura della Materia II”.

An introductory course in statistical physics, stochastic processes and condensed matter physics. I held lectures on stochastic processes and elements of stochastic calculus (17 hours).

2012/2013

Teaching assistant, University of Pisa, Pisa, “Struttura della Materia II”.

An introductory course in statistical physics, stochastic processes and condensed matter physics (10 hours).

Thesis supervision

- 2018

Gianmarco Perrupato, master thesis at Sapienza University of Rome, Rome, “The matching problem on the Bethe lattice”. Co-supervisor. Supervisor: Giorgio Parisi

- 2016

Matteo D’Achille, master thesis at University of Milan, Milan, “On Two Assignment Problems: Random Assignment and Euclidean Bipartite Matching”. Co-supervisor. Supervisor: Sergio Caracciolo

Thesis committee

- 2015

Gustavo T. Pfeiffer, COPPE/UFRJ, Rio de Janeiro.

Member of the committee for the assignment of the degree of Master of Science.

Invited talks

2019

- *Random matching problems: combinatorics, geometry and disorder*, ICMAT, Madrid (Spain), 5 November 2019.
- *Fluctuations in the random-link matching problem*, ENS, Paris (France), 22 October 2019.

2018

- *Random matching problems*, ENS, Paris (France), 7 June 2018.
- *Random matching problems*, King's college, London (UK), 23 May 2018.

Conferences and workshops organized

2019

- *40 years of Replica Symmetry Breaking*, Sapienza University of Rome, Rome (Italy), 10–13 September 2019.

2018

- *Disordered serendipity: a glassy path to discovery*, Sapienza University of Rome, Rome (Italy), poster presented, 19 September–22 September 2018.
- *Beyond Mean Field Theory: Renormalisation group and non perturbative approaches to disordered and glassy systems*, Sapienza University of Rome, Rome (Italy), 3 January–5 January 2018.

Conferences and workshops as invited speaker

2020

- *Recent progress in glassy systems: Marginally Stable Phases, Quantum Behaviour, Machine Learning and Mathematical Physics*, Les Houches (France), 17–21 February 2020.

2019

- *People in Optimal Transportation*, Scuola Normale Superiore di Pisa, Cortona (Italy), 23–29 June 2019.

Conferences and workshops attended

2019

- *Workshop on Science of Data Science*, International Centre of Theoretical Physics, Trieste (Italy), 30 September – 5 October 2019.
- *Breakdown Of Ergodicity In Isolated Quantum Systems: From Glassiness To Localization*, Galileo Galilei Institute, Florence (Italy), 27–31 May 2019.
- *Simons Collaboration on Cracking the Glass Problem Third Annual Meeting*, New York City, 7 March–8 March 2019.

2018

- *Simons Collaboration Meeting*, Royaumont Abbey (France), 20 November – 25 November 2018.
- *Statistical physics and machine learning back together*, Institut d'Études Scientifiques de Cargèse, Cargèse (France), 20 August–2 September 2018.
- *23rd Rencontres Claude Itzykson: Statistical Physics of Disordered and Complex Systems*, Saclay (France), 4 June–6 June 2018.
- *Simons Collaboration on Cracking the Glass Problem Second Annual Meeting*, New York City, poster presented, 8 March–9 March 2018.

2017

- *The Statistical Physics Cornucopia*, Paris (France), 6 September–8 September 2017.
- *Dynamics of glass-forming liquids*, Carlsberg Academy, Copenhagen (Denmark), 5 April–7 April 2017.
- *Simons Collaboration on Cracking the Glass Problem First Annual Meeting*, New York City, poster presented, 9 March–10 March 2017.

2016

- *Conference on Entanglement and Non-Equilibrium Physics of Pure and Disordered Systems*, ICTP, Trieste (Italy), 25 July–27 July 2016.
- *International conference on Statistical Physics – STATPHYS26*, IUPAP, Lyon (France), poster presented, 18 July–22 July 2016.
- *31st International Colloquium on Group Theoretical Methods in Physics*, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro (Brazil), talk and poster presented, 19 June –25 June 2016.

2015

- *International workshop on foundations of complexity*, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro (Brazil), talk presented, 19 October–24 October 2015.
- *New Trends in Statistical Mechanical Foundations of Complexity*, Ettore Majorana Centre for Scientific Culture, Erice (Italy), talk and poster presented, 27 July–2 August 2015.

2013

- *Physics and Mathematics of Nonlinear Phenomena – PMNP2013*, University of Salento, Gallipoli (Italy), poster presented, 22–29 June 2013.
- *38th Conference of the Middle European Cooperation in Statistical Physics – MECO38*, ICTP, Trieste, 25–28 March 2013.

Languages

- Italian Mother tongue
- English Independent user
- Portuguese Basic user

Computer skills

- Word, LATEX, WYSIWYG editors processing
- Programming C/C++, Python, Symbolic Wolfram Mathematica computation
- OS Unix, Microsoft Windows
- Data Visualization by Gnuplot, Pgfplots

Referee for *Annalen der Physik*, *Physica A*, *Physical Review Letters*, *Physical Review E*, *The European Physical Journal Plus*, *Theoretical and Mathematical Physics*, *Journal of Physics A: Mathematical and theoretical*

Publications

1. R.A. Leo, G. Sicuro and P. Tempesta, A theorem on the existence of symmetries of fractional PDEs, *Comptes rendus mathématique* 354(3), p. 219–222 (2014).
2. S. Caracciolo, C. Lucibello, G. Parisi and G. Sicuro, Scaling hypothesis for the Euclidean bipartite matching problem, *Physical Review E* 90(1), 012118 (2014).
3. S. Caracciolo and G. Sicuro, One-dimensional Euclidean matching problem: Exact solutions, correlation functions, and universality, *Physical Review E* 90(4), 042112 (2014).
4. S. Caracciolo and G. Sicuro, Scaling hypothesis for the Euclidean bipartite matching problem. II. Correlation functions, *Physical Review E* 91(6), 062125 (2015).
5. G. Sicuro, P. Tempesta, A. Rodríguez, C. Tsallis, On the robustness of the q -Gaussian family, *Annals of Physics*, 363, p. 316–336 (2015).
6. S. Caracciolo and G. Sicuro, Quadratic stochastic Euclidean bipartite matching problem, *Physical Review Letters* 115, 230601 (2015).
7. G. Sicuro and P. Tempesta, Groups, Information Theory and Einstein's Likelihood Principle, *Physical Review E (Rapid Communication)* 93(4), 040101(R) (2016).
8. G. Sicuro, D. Bagchi and C. Tsallis, On the connection between linear combination of entropies and linear combination of extremizing distributions, *Physics Letters A* 380, 2025–2030 (2016).
9. G. Sicuro, P. Rapčan and C. Tsallis, Nonlinear inhomogeneous Fokker–Planck equations: entropy and free-energy time evolution, *Physical Review E* 94(6), 062117 (2016).
10. C. Lucibello, G. Parisi and G. Sicuro, One-loop diagrams in the Random Euclidean Matching Problem, *Physical Review E* 95(1), 012302 (2017).
11. R.A. Leo, P. Tempesta and G. Sicuro, A foundational approach to the Lie theory for fractional order partial differential equations, *Fractional Calculus and Applied Analysis*, 20(1), 212–231 (2017).
12. G. Sicuro and C. Tsallis, q -Generalized representation of the d -dimensional Dirac delta and q -Fourier transform, *Physics Letters A*, 381(32), 2583–2587 (2017).
13. S. Caracciolo, M.P. D'Achille, E. Malatesta and G. Sicuro, Finite size corrections in the random assignment problem, *Physical Review E* 95, 052129 (2017).
14. S. Caracciolo, M.P. D'Achille and G. Sicuro, Random Euclidean matching problems in one dimension, *Physical Review E* 96, 042102 (2017).
15. C. Lucibello, E. Malatesta, G. Parisi and G. Sicuro, The Random Fractional Matching Problem, *Journal of Statistical Mechanics* 053301 (2018).
16. F.P.C. Benetti, G. Parisi, F. Pietracaprina, G. Sicuro, Mean-field model for the density of states of jammed soft spheres, *Physical Review E* 97, 062157 (2018).
17. S. Caracciolo, M.P. D'Achille and G. Sicuro, Anomalous scaling of the optimal cost in the one-dimensional random assignment problem, *Journal of Statistical Physics* 174(4), 846–864 (2019).

18. E. Malatesta, G. Parisi and G. Sicuro, Fluctuations in the random-link matching problem, *Physical Review E* 100, 032102 (2019).
19. G. Parisi, G. Perrupato and G. Sicuro, Random-link matching problems on random regular graphs, *Journal of Statistical Mechanics*, 033301 (2020).
20. G. Semerjian, G. Sicuro and L. Zdeborová, Recovery thresholds in the sparse planted matching problem, *arXiv:2005.11274* (2020).

Data

11/7/2020

Luogo

Parabita