

PERSONAL INFORMATION



Giulio Cimini

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WORK EXPERIENCE

November 2022 (ongoing)

Associate Professor

Physics Department, Università di Roma "Tor Vergata"

June 2020 (ongoing)

Research Associate

"Enrico Fermi" Research Center

November 2019 – November 2022

Senior Assistant Professor (RTD-B)

Physics Department, Università di Roma "Tor Vergata"

January 2019 – November 2019

Researcher

Institute for Complex Systems (ISC) - Italian National Research Council (CNR)

November 2015 – December 2018

Assistant Professor (RTD-A)

NETWORKS unit, IMT School for Advanced Studies

March 2014 – October 2015

Postdoctoral fellow

Institute for Complex Systems (ISC) - Italian National Research Council (CNR)

March 2013 – February 2014

Postdoctoral fellow

Mathematics Department, Universidad Carlos III de Madrid

EDUCATION AND TRAINING

September 2009 – February 2013

PhD in Theoretical and Interdisciplinary Physics

Université de Fribourg (Switzerland)

Thesis: *Physics of evolving complex systems: models, algorithms and applications*

October 2006 – February 2009

Master of Science in Physics

Università "Sapienza" di Roma (Italy) – grade: 110/110 cum laude

September 2003 – September 2006

Bachelor degree in Physics (110/110 cum laude)

Università "Sapienza" di Roma (Italy) – grade: 110/110 cum laude

September 1998 – July 2003

Diploma di Maturità (100/100 cum laude)

Liceo Scientifico Statale di Roma "A. Avogadro" (Italy) – grade: 100/100 cum laude

TEACHING EXPERIENCE

AA 19/20 to 22/23

Optimization and Statistical Mechanics

Course for the Master in Physics (Università di Roma Tor Vergata)

AA 22/23

Laboratory of Numerical Calculus and Informatics

Course for the Bachelor in Physics (Università di Roma Tor Vergata)

- AA 20/21, 22/23 PCTO (Paths for Transversal Skills and Orientation) in Big Data
Lab activities for High School students
- AA 18/19 Mechanics
Exercises for Bachelor in Physics ("Sapienza" Università di Roma)
- AA 17/18 Complex Networks for Data Science
Course for the PhD in Data Science (SNS Pisa) and in Systems Science (IMT Lucca)
- AA 15/16 Advanced Theory of Complex Networks; Economic and Financial Networks
Courses for the PhD in Economics, Management and Data Science (IMT Lucca)
- AA 14/15, 18/19 Physics of Complex Systems
Lectures and Tutoring of Master Students in Physics ("Sapienza" Università di Roma)
- AA 12/13 Computational Physics and Complex Networks
Proseminars/Ateliers for Master in Physics (Université de Fribourg)
- AA 11/12 Thermodynamics, Statistical Mechanics
Exercises and Lectures for Bachelor / Master in Physics (Université de Fribourg)
- AA 10/11 Mathematical Methods for Physics
Exercises for Bachelor in Physics (Université de Fribourg)

RESEARCH GRANTS

- 2023 *C2T - From Crises to Theory*
PI – MUR PRIN PNNR (Progetti di Ricerca di Rilevante Interesse Nazionale) 2022 – 231 000 EUR
- 2023 *RENet - Reconstructing economic networks: from physics to machine learning and back*
Co-PI – MUR PRIN (Progetti di Ricerca di Rilevante Interesse Nazionale) 2022 – 197 500 EUR
- 2022 *Deep'n'Rec: Adversarial Deep Learning for Network Reconstruction*
Principal Investigator – Progetto di Ricerca Scientifica d'Ateneo 2021, Tor Vergata – 10 000 EUR
- 2021 *Complexity in Epidemiology*
Principal Investigator – Centro "Enrico Fermi" research project, 3-year plan 2021-23 – 90 000 EUR
- 2020 *Reconstructing the dependency network of financial institutions for controlling systemic risk*
Principal Investigator – CNR/JSPS joint research project – 36 000 EUR (declined)
- 2019 *Optimized Reconstruction of Complex NetworS (ORCS)*
Principal Investigator – PAI (progetto di attività integrate), IMT Lucca – 20 000 EUR
- 2014 *Human Behavior on Networks: New Models for New Experiments*
Individual grant – fellowship of the Swiss National Science Foundation – 47 000 CHF (declined)
- 2013 *Human Behavior on Networks: Connecting Models and Experiments*
Individual grant – fellowship of the Swiss National Science Foundation – 42 800 CHF

BIBLIOMETRIC INDICATORS

	Web of Science	Scopus	Google Scholar
Publications	59	55	78
Citations	1180	1309	2211
H-index	19	19	23
Normalized H *	1.58	1.58	1.92

* computed by dividing H-index by years from first publication

ADDITIONAL INFORMATION

- Scientific Qualifications (Italy)
Theoretical Physics of Fundamental Interactions (sc 02/A2, full professor)
Theoretical Physics of Matter (sc 02/B2, full professor)
Applied Physics, Didactics and History of Physics (sc 02/D1, full professor)

Honours and Awards	2013: Swiss National Science Foundation: fellowship for prospective researchers 2014: Swiss National Science Foundation: advanced postdoc mobility
Institutional Roles	Board member of the PhD in Data Science Università di Roma Tor Vergata – AA 22/23, 23/24 Member of Steering Committee for Didactics Physics Department, Università di Roma Tor Vergata – AA 20/21, 21/22, 22/23 Board member of the PhD in Data Science Scuola Normale Superiore di Pisa – AA 17/18, 18/19, 19/20, 20/21
Role in Scientific Societies	2017-2023: Council member of the Complex Systems Society 2019-2022: Board member of the Network Science Society 2021-2022: Member of the steering committee of CCS/Italy
Participation in Research Projects	CN1 <i>Centro Nazionale High Performance Computing</i> <i>SoBigData Research Infrastructure</i> (H2020-EU.1.4.1.2 #654024) <i>Center of Excellence for Global Systems Science</i> (H2020-EU.1.4.1.3. #676547) <i>Dolphins</i> : Distributed Global Financial Systems for Society (H2020-EU.1.2.2. #640772) <i>Simpol</i> : Financial Systems Simulation and Policy Modelling (FP7-ICT #610704) <i>Growthcom</i> : Growth and Innovation Policy-Modelling (FP7-ICT #611272) <i>CRISIS-LAB</i> : Controllo delle Crisi nei Sistemi Socio Economici Complessi (MIUR PNR) <i>New Models of Growing Networks</i> (SNSF #143272) <i>Evolving and adaptive networks</i> (SNSF #132253) <i>Quality Collectives</i> : Socially Intelligent Systems for Quality (FP7-ICT #231200) <i>Liquid Publication</i> : Innovating the Scientific Knowledge Object Lifecycle (FP7-ICT #213360)
Supervised Students	Daniele Cirulli, Giulia De Palma, Anna Mancini, Gioacchino Mauri <i>Master of Science in Physics</i> , Università di Roma Tor Vergata Massimiliano Bassi, Alessandro Carra, Benedetta Castagna, Lorenzo Cirigliano, Luca Didomenico, Martina Formichini, Francesca Giuffrida, Giulia Poce, Matteo Serafino <i>Master of Science in Physics</i> , Università "Sapienza" di Roma Valentina Macchiati <i>Master of Science in Physics</i> , ISI foundation Turin Gianmarco Ricciardi <i>Master of Science in Physics</i> , Università di Pavia Leonardo Niccolò Ialongo <i>Master of Science in Engineering</i> , Università "Sapienza" of Rome Lorenzo Buffa, Antonio Desiderio, Anna Mancini, Lavinia Rossi-Mori <i>PhD in Physics</i> , Università di Roma Tor Vergata Giovanni Palermo <i>PhD in Physics</i> , Università "Sapienza" di Roma Giulia Fischetti <i>PhD in Physics</i> , Università "Ca' Foscari" di Venezia Alessandro Ferracci, Matteo Serri <i>PhD in Economics</i> , Università "Sapienza" di Roma Giuseppe Brandi <i>PhD in Economics</i> , LUISS Università di Roma Daniele D'Armiento <i>PhD in Artificial Intelligence</i> , Scuola Normale Superiore di Pisa Massimiliano Fessina <i>PhD in Systems Science</i> , IMT Lucca Giacomo Rapisardi <i>PhD in Computer Science and System Engineering</i> , IMT Lucca Matteo Serafino <i>PhD in Economics, Networks and Business Administration</i> , IMT Lucca

Invited Conference Talks

- Reconstruction and Validation of economic and financial networks*
NetSci'23 Focus Session on Networks in Economics, 13/07/2023, Vienna (Austria)
- Statistical physics of financial networks*
Statistical Physics of Complex Systems (EPS SNPD conference), 10/09/2021, Trieste (Italy)
- Unfolding the innovation system for the development of countries*
NetSciX'20 Special Workshop on Economic & Financial Networks, 23/01/2020, Tokyo (Japan)
- What do central counterparties default funds really cover? A network-based stress test answer*
II FINEXUS Conference on Financial Networks and Sustainability, 19/01/2018, Zurich (Switzerland)
- Algorithms for reputation and quality in scientific e-communities*
APS March Meeting, 16/03/2017, New Orleans (Louisiana)
- Agent-based dynamics of shocks propagation on reconstructed financial networks*
I International Conference on Synthetic Populations, 22/02/2017, Lucca (Italy)
- Statistically validated network of portfolio overlaps and systemic risk*
I FINEXUS Conference on Financial Networks and Sustainability, 12/01/2017, Zurich (Switzerland)
- Credit & funding shocks in interbank markets*
I Conference on Global System Science & Policy, 28/11/2016, London (United Kingdom)

Invited Research Seminars

- Statistical physics of networks and applications*
Statistical Physics @CaFoscari & Friends, 10/12/2021, Venice (Italy)
- The statistical physics of networks and applications in finance*
INFN Theory seminar, 03/02/2020, INFN section Tor Vergata, Rome (Italy)
- How the interbank market becomes systemically dangerous: an agent-based network model of financial distress propagation*
Bank of England research seminar, 27/06/2017, London (United Kingdom)
- Learning dynamics explains human behavior in Prisoner's Dilemma on networks*
LABSS seminar, 29/05/2014, Institute of Cognitive Science and Technologies (ISTC-CNR) Rome (Italy)
- Human behavior in Prisoner's Dilemma is explained by learning dynamics*
BECS seminar, 26/06/2013, Aalto University (Finland)
- Physics of evolving complex systems: models, algorithms and applications*
ISC seminar, 06/06/2013, Institute of Complex Systems (ISC-CNR) Rome (Italy)
- Temporal effects in the growth of networks*
GISC Workshop, 08/02/2013, Universidad Carlos III Madrid (Spain)

School Lectures & Tutorials

- Statistical validation with null network models*
Economic Fitness and Complexity Spring School, 07/06/2023, Rome (Italy)
- Statistical validation for bipartite network projections*
Training for Joint research Center of EU commission, 23/11/2020, [online]
- Network sensitivity of systemic risk (project tutor)*
I Workshop "Complexity 72h", 07-11/05/2018, Lucca (Italy)
- Game theory on networks*
I School "New Trends in Statistical Physics", 07/07/2017, Corfù (Greece)
- Complex network reconstruction from partial information via fitness-based ERG modeling*
"Socio-Economic Complex Systems" (GROWTHCOM Project School), 6-12/09/2015, Lipari (Italy)

Self-induced emergence of consensus in social networks: Reddit and the GME short squeeze
 - NetSciX'23 Intl. School and Conference on Network Science, 09/02/2023, Buenos Aires (Argentina)

Meta-validation of bipartite network projections

- CCS'22 International Conference on Complex Systems, 21/10/2022, Palma de Mallorca (Spain)
- V Workshop "Complex networks: from socio-economic systems to biology and brain", 11/07/2022, Lipari (Italy)
- Networks 2021 Intl. School and Conference on Network Science, 06/09/2021, Washington DC [online]

Scale-free networks revealed from finite-size scaling

- APS March Meeting, 06/03/2020, Denver (Colorado)
- IV Workshop "Complex networks: from socio-economic systems to biology and brain", 15/07/2019, Lipari (Italy)

Grand Canonical ensemble of weighted networks

- NetSciX'20 Intl. School and Conference on Network Science, 21/01/2020, Tokyo (Japan)
- CCS'19 International Conference on Complex Systems, 01/10/2019, Singapore

Unfolding the innovation system for the development of countries

- CCS'19 International Conference on Complex Systems, 01/10/2019, Singapore
- CCS/Italy'19 Italian Regional Conference on Complex Systems, 01/07/2019, Trento (Italy)
- NetSci'19 International Conference on Network Science, 30/05/2019, Burlington (USA)

Maximum-entropy reconstruction of economic and financial networks

- "Complex Financial Networks and Systemic Risk" @CCS'17, 20/09/2017, Cancun (Mexico)
- CompleNet'16 International Conference on Complex Networks, 24/03/2016, Dijon (France)
- XX Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi, 29/06/2015, Parma (Italy)

What do central counterparties default funds really cover? A network-based stress test answer

- CCS'17 International Conference on Complex Systems, 19/09/2017, Cancun (Mexico)

Statistically validated network of portfolio overlaps and systemic risk

- CCS'17 International Conference on Complex Systems, 18/09/2017, Cancun (Mexico)
- CompleNet'17 International Workshop on Complex Networks, 22/03/2017, Dubrovnik (Croatia)
- CCS'16 International Conference on Complex Systems, 22/09/2016, Amsterdam (Netherlands)
- I Workshop "Complex networks: from socio-economic systems to biology and brain", 01/09/2016, Lipari (Italy)
- XXI Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi, 27/06/2016, Parma (Italy)

Algorithms for reputation and quality in scientific e-communities

- "Statistical Physics for the Digital Economy" @ΣΦ'17, 12/07/2017, Corfù (Greece)

Entangling credit & funding shocks in interbank markets

- ΣΦ'17 International Conference on Statistical Physics, 10/07/2017, Corfù (Greece)
- CompleNet'17 International Workshop on Complex Networks, 22/03/2017, Dubrovnik (Croatia)
- CCS'16 International Conference on Complex Systems, 19/09/2016, Amsterdam (Netherlands)

The scientific competitiveness of nations

- FISMAT'15 Italian National Conference on Condensed Matter Physics, 29/09/2015, Palermo (Italy)
- ICCSS'15 International Conference on Computational Social Science, 11/06/2015, Helsinki (Finland)
- NetSci'15 International Conference on Network Science, 05/06/2015, Zaragoza (Spain)
- NetSciX'15 Intl. School and Conference on Network Science, 15/01/2015, Rio de Janeiro (Brazil)

Reconstructing topological properties of complex networks using the fitness model

- SEDNAM @SOCINFO'14 Intl. Conference on Social Informatics, 10/11/2014, Barcelona (Spain)
- ΣΦ'14 International Conference on Statistical Physics, 09/07/2014, Rhodes (Greece)

Learning dynamics explains human behavior in Prisoner's Dilemma on networks

- DPG Spring Meeting, 03/04/2014, Dresden (Germany)
- ECCS'13 European Conference on Complex Systems, 19/09/2013, Barcelona (Spain)

Quality, trust and reputation: ranking on a multi-layer network

- ISMIS'12 XX Intl. Symposium on Methodologies for Intelligent Systems, 04/12/2012, Macau (China)

The role of taste affinity in agent-based models for social recommendation

- Workshop "Agent-Based Models & Complex Techno-Social Systems", 04/07/2012, Zurich (Switzerland)

Newsbag, an adaptive model for news recommendation

- EU-China Workshop on Complexity Science, 16/09/2011, University of Fribourg (Switzerland)

Conferences & Schools
Organization

- NetSciX2024 - International School and Conference on Network Science**
(Venice, Italy, 22-25/01/2024) Program Chair
- IX Workshop “Complexity in Economics and Finance” @CCS’23**
(Salvador de Bahia, Brasil, 19/10/2023)
- VIII Workshop “Economic and Financial Networks” @NetSci’23**
(Vienna, Austria, 10/07/2023)
- VI Workshop “Complex Networks: From Socio-Economic Systems to Biology and Brain”**
(Lipari, Italy, 03-09/07/2023)
- Workshop on Social Network Dynamics and Impact on Financial Markets**
(IMT Lucca, Italy, 26-27/01/2023)
- VII Workshop “Complexity in Economics and Finance” @CCS’22**
(Palma, Spain, 19/10/2022)
- CCS2020 - Conference on Complex Systems**
(4-11/12/2020 - online)
- NetSci2020 - International School and Conference on Network Science**
(Rome, Italy, 17-25/09/2020 - online) General Chair
- First online NetSci conference, with more than 700 attendees
 - 12 invited speakers + 3 keynote speakers for COVID-19 thematic plenary
 - 6 school speakers and 22 satellite events
 - 630 submitted contributions, resulting in 220 talks and 200 posters
 - The event took place using different online tools: Brelia for virtual environment, Zoom and Streamyard for webinars, Vimeo for live streaming of content, Slack for real-time interactions
- IV Workshop “Statistical Physics of Financial and Economic Networks” @NetSci’19**
(Burlington, Vermont, 28/05/2019)
- II School “New Trends in Statistical Physics”**
(Lipari, Italy, 17-18/07/2018)
- III Workshop “Complex Networks: From Socio-Economic Systems to Biology and Brain”**
(Lipari, Italy, 10-16/07/2018)
- XXIII Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi**
chair of young researchers session (Parma, Italy, 20-22/06/2018)
- III Workshop “Statistical Physics of Financial and Economic Networks” @NetSci’18**
(Paris, France, 11-12/06/2018)
- II Workshop “Complex Networks: From Socio-Economic Systems to Biology and Brain”**
(Lipari, Italy, 08-14/09/2017)
- II Workshop “Statistical Physics of Financial and Economic Networks” @NetSci’17**
(Indianapolis, Indiana, 19/06/2017)
- I Workshop “Statistical Physics of Financial and Economic Networks” @StatPhys’26**
(Paris, France, 15-16/07/2016)
- EU-China Workshop on Complexity Science**
(Fribourg, Switzerland, 14-19/09/2011)

Program Committee

- IC2S2’23** (Copenhagen, Denmark, 17-20/07/2023)
- CompleNet’23** (Aveiro, Portugal, 25-28/04/2023)
- NetSciX’23** (Buenos Aires, Argentina, 07-10/02/2023)
- CCS’22** (Palma De Mallorca, Spain, 17-21/10/2022)
- NetSciX’22** (Porto, Portugal, 08-11/02/2022)
- PASC21** (Geneva, Switzerland, 05-08/07/2021)
- CompleNet’20** (Exeter, UK, 31/03-04/04/2020)
- NetSciX’20** (Tokyo, Japan, 20-23/01/2020)
- NetSci’18** (Paris, France, 11-15/06/2018)
- CompleNet’18** (Boston, USA, 05-08/03/2018)

Peer-Reviewing

- Europhysics Letters, Journal of Informetrics, Journal of Statistical Mechanics, Journal of the Royal Society Interface, Mathematical Finance, Nature Physics, Physical Review Letters, Physical Review X, PLoS ONE, Quantitative Finance, Science Advances, Scientometrics, Scientific Reports, and many others. Full list at <https://www.webofscience.com/wos/author/record/234301>
- WoS Top reviewers in Cross-Field - September 2018

Editorial Activity	Frontiers in Physics - Interdisciplinary Physics (ISSN 2296-424X) Associate Editor (2022 - ongoing)
	Complexity (ISSN 1099-0526) Editorial Board member (2018 - 2022)
	Entropy (ISSN 1099-4300) Guest Editor of special issue <i>Complexity in Economics and Finance</i> (2022)
	Games (ISSN 2073-4336) Guest Editor of special issue <i>Evolutionary Network Games</i> (2018)

OUTREACH & PRESS

Nature Portfolio (2022)	Did WallStreetBets increase GameStop popularity to drive the market?
Comunicato stampa CREF (2022)	Un approccio di meta-validazione nelle proiezioni di reti bipartite
Wired.it (2021)	Dando priorità alle prime dosi di vaccino potremmo ridurre i decessi negli over 80?
Comunicato stampa CNR (2019)	Massima entropia e reti complesse: dalla finanza alla biologia
Il Tirreno (2019)	Finanza, complessità e fisica statistica: una ricerca di IMT e CNR
Phys.org (2019)	Common frame for analyzing complex systems in Physics and Economics
Risk.net (2018)	'Cover 2' CCP reserve standard inadequate – study
Risk.net (2017)	Basel III has aided system stability, interbank models suggest
MeJudice (2017)	Complexe lessen voor bankiers en toezichhouders
Il Fatto Quotidiano Blog (2015)	Ricerca scientifica: tanto spendi, tanto ottieni
Il Fatto Quotidiano Blog (2015)	I ricercatori più bravi in matematica? Gli studi premiano gli italiani (ditelo ai politici)
Science is News (2014)	Cooperation is learned through practice, according to a mathematical model
Physics Synopsis (2011)	You don't cite me anymore

PUBLICATIONS

- [1] G. Cimini, M. Medo, T. Zhou, D. Wei, and Y.-C. Zhang. Heterogeneity, quality, and reputation in an adaptive recommendation model. *The European Physical Journal B*, 80(2):201–208, 2011. doi:[10.1140/epjb/e2010-10716-5](https://doi.org/10.1140/epjb/e2010-10716-5)
- [2] D. Wei, T. Zhou, G. Cimini, P. Wu, W. Liu, and Y.-C. Zhang. Effective mechanism for social recommendation of news. *Physica A: Statistical Mechanics and its Applications*, 390:2117–2126, 2011. doi:[10.1016/j.physa.2011.02.005](https://doi.org/10.1016/j.physa.2011.02.005)
- [3] M. Medo, G. Cimini, and S. Gualdi. Temporal effects in the growth of networks. *Physical Review Letters*, 107:238701, 2011. doi:[10.1103/PhysRevLett.107.238701](https://doi.org/10.1103/PhysRevLett.107.238701)
- [4] C. H. Yeung, G. Cimini, and C.-H. Jin. Dynamics of movie competition and popularity spreading in recommender systems. *Physical Review E*, 83:016105, 2011. doi:[10.1103/PhysRevE.83.016105](https://doi.org/10.1103/PhysRevE.83.016105)
- [5] T. Zhou, M. Medo, G. Cimini, Z.-K. Zhang, and Y.-C. Zhang. Emergence of scale-free leadership structure in social recommender systems. *PLoS ONE*, 6(7):e20648, 2011. doi:[10.1371/journal.pone.0020648](https://doi.org/10.1371/journal.pone.0020648)
- [6] G. Cimini, D. Chen, M. Medo, L. Lü, Y.-C. Zhang, and T. Zhou. Enhancing topology adaptation in information-sharing social networks. *Physical Review E*, 85:046108, 2012. doi:[10.1103/PhysRevE.85.046108](https://doi.org/10.1103/PhysRevE.85.046108)
- [7] H. Liao, G. Cimini, and M. Medo. Measuring quality, reputation and trust in online communities. In *Foundations of Intelligent Systems*, volume 7661 of *Lecture Notes in Computer Science*, pages 405–414. Springer Berlin Heidelberg, 2012. ISBN 978-3-642-34623-1. doi:[10.1007/978-3-642-34624-8_46](https://doi.org/10.1007/978-3-642-34624-8_46)
- [8] A. Zeng and G. Cimini. Removing spurious interactions in complex networks. *Physical Review E*, 85:036101, 2012. doi:[10.1103/PhysRevE.85.036101](https://doi.org/10.1103/PhysRevE.85.036101)

- [9] D. Chen, A. Zeng, G. Cimini, and Y.-C. Zhang. Adaptive social recommendation in a multiple category landscape. *The European Physical Journal B*, 86(2):61, 2013. doi:[10.1140/epjb/e2012-30899-9](https://doi.org/10.1140/epjb/e2012-30899-9)
- [10] G. Cimini, A. Zeng, M. Medo, and D. Chen. The role of taste affinity in agent-based models for social recommendation. *Advances in Complex Systems*, 16(04n05):1350009, 2013. doi:[10.1142/S0219525913500094](https://doi.org/10.1142/S0219525913500094)
- [11] G. Cimini and A. Sánchez. Learning dynamics explains human behaviour in prisoner's dilemma on networks. *Journal of the Royal Society Interface*, 11:20131186, 2014. doi:[10.1098/rsif.2013.1186](https://doi.org/10.1098/rsif.2013.1186)
- [12] G. Cimini, A. Gabrielli, and F. Sylos Labini. The scientific competitiveness of nations. *PLoS ONE*, 9(12):e113470, 2014. doi:[10.1371/journal.pone.0113470](https://doi.org/10.1371/journal.pone.0113470)
- [13] H. Liao, R. Xiao, G. Cimini, and M. Medo. Network-driven reputation in online scientific communities. *PLoS ONE*, 9(12):e112022, 2014. doi:[10.1371/journal.pone.0112022](https://doi.org/10.1371/journal.pone.0112022)
- [14] G. Cimini and A. Sánchez. How evolutionary dynamics affects network reciprocity in prisoner's dilemma. *Journal of Artificial Societies and Social Simulation*, 18(2):22, 2015. ISSN 1460-7425. doi:[10.18564/jasss.2726](https://doi.org/10.18564/jasss.2726)
- [15] G. Cimini, C. Castellano, and A. Sánchez. Dynamics to equilibrium in network games: Individual behavior and global response. *PLoS ONE*, 10(3):e0120343, 2015a. doi:[10.1371/journal.pone.0120343](https://doi.org/10.1371/journal.pone.0120343)
- [16] G. Cimini, T. Squartini, A. Gabrielli, and D. Garlaschelli. Estimating topological properties of weighted networks from limited information. *Physical Review E*, 92:040802, 2015b. doi:[10.1103/PhysRevE.92.040802](https://doi.org/10.1103/PhysRevE.92.040802)
- [17] G. Cimini, T. Squartini, D. Garlaschelli, and A. Gabrielli. Systemic risk analysis on reconstructed economic and financial networks. *Scientific Reports*, 5:15758, 2015c. doi:[10.1038/srep15758](https://doi.org/10.1038/srep15758)
- [18] G. Cimini, T. Squartini, N. Musmeci, M. Puliga, A. Gabrielli, D. Garlaschelli, S. Battiston, and G. Caldarelli. Reconstructing topological properties of complex networks using the fitness model. In *Social Informatics*, volume 8852 of *Lecture Notes in Computer Science*, pages 323–333. Springer International Publishing, 2015d. ISBN 978-3-319-15167-0. doi:[10.1007/978-3-319-15168-7_41](https://doi.org/10.1007/978-3-319-15168-7_41)
- [19] M. Dilucca, G. Cimini, A. Semmoloni, A. Deiana, and A. Giansanti. Codon bias patterns of e. coli's interacting proteins. *PLoS ONE*, 10(11):e0142127, 2015. doi:[10.1371/journal.pone.0142127](https://doi.org/10.1371/journal.pone.0142127)
- [20] G. Cimini and M. Serri. Entangling credit and funding shocks in interbank markets. *PLoS ONE*, 11(8):e0161642, 2016. doi:[10.1371/journal.pone.0161642](https://doi.org/10.1371/journal.pone.0161642)
- [21] G. Cimini, A. Zaccaria, and A. Gabrielli. Investigating the interplay between fundamentals of national research systems: Performance, investments and international collaborations. *Journal of Informetrics*, 10(1):200–211, 2016. doi:[10.1016/j.joi.2016.01.002](https://doi.org/10.1016/j.joi.2016.01.002)
- [22] S. Gualdi, G. Cimini, K. Primicerio, R. Di Clemente, and D. Challet. Statistically validated network of portfolio overlaps and systemic risk. *Scientific Reports*, 6:39467, 2016. doi:[10.1038/srep39467](https://doi.org/10.1038/srep39467)
- [23] M. Medo and G. Cimini. Model-based evaluation of scientific impact indicators. *Physical Review E*, 94:032312, 2016. doi:[10.1103/PhysRevE.94.032312](https://doi.org/10.1103/PhysRevE.94.032312)
- [24] M. Serri, G. Caldarelli, and G. Cimini. How the interbank market becomes systemically dangerous: an agent-based network model of financial distress propagation. *Journal of Network Theory in Finance*, 3:1–18, 2017. doi:[10.21314/JNTE.2017.025](https://doi.org/10.21314/JNTE.2017.025)
- [25] G. Cimini. Evolutionary network games: Equilibria from imitation and best response dynamics. *Complexity*, 2017:7259032, 2017. doi:[10.1155/2017/7259032](https://doi.org/10.1155/2017/7259032)
- [26] A. Patelli, G. Cimini, E. Pugliese, and A. Gabrielli. The scientific influence of nations on global scientific and technological development. *Journal of Informetrics*, 11(4):1229–1237, 2017. doi:[10.1016/j.joi.2017.10.005](https://doi.org/10.1016/j.joi.2017.10.005)
- [27] T. Squartini, A. Almog, G. Caldarelli, I. van Lelyveld, D. Garlaschelli, and G. Cimini. Enhanced capital-asset pricing model for the reconstruction of bipartite financial networks. *Physical Review E*, 96:032315, 2017a. doi:[10.1103/PhysRevE.96.032315](https://doi.org/10.1103/PhysRevE.96.032315)
- [28] T. Squartini, G. Cimini, A. Gabrielli, and D. Garlaschelli. Network reconstruction via density sampling. *Applied Network Science*, 2(1):3, 2017b. doi:[10.1007/s41109-017-0021-8](https://doi.org/10.1007/s41109-017-0021-8)
- [29] G. Brandi, R. D. Clemente, and G. Cimini. Epidemics of liquidity shortages in interbank markets. *Physica A: Statistical Mechanics and its Applications*, 507:255–267, 2018. doi:[10.1016/j.physa.2018.05.104](https://doi.org/10.1016/j.physa.2018.05.104)
- [30] M. Dilucca, G. Cimini, and A. Giansanti. Essentiality, conservation, evolutionary pressure and codon bias in bacterial genomes. *Gene*, 663:178–188, 2018. doi:[10.1016/j.gene.2018.04.017](https://doi.org/10.1016/j.gene.2018.04.017)

- [31] S. Kojaku, G. Cimini, G. Caldarelli, and N. Masuda. Structural changes in the interbank market across the financial crisis from multiple core–periphery analysis. *Journal of Network Theory in Finance*, 4(3):33–51, 2018. doi:[10.21314/JNTF.2018.044](https://doi.org/10.21314/JNTF.2018.044)
- [32] G. Rapisardi, A. Arenas, G. Caldarelli, and G. Cimini. Multiple structural transitions in interacting networks. *Physical Review E*, 98:012302, 2018. doi:[10.1103/PhysRevE.98.012302](https://doi.org/10.1103/PhysRevE.98.012302)
- [33] T. Squartini, G. Caldarelli, G. Cimini, A. Gabrielli, and D. Garlaschelli. Reconstruction methods for networks: The case of economic and financial systems. *Physics Reports*, 757:1–47, 2018. doi:[10.1016/j.physrep.2018.06.008](https://doi.org/10.1016/j.physrep.2018.06.008)
- [34] G. Poce, G. Cimini, A. Gabrielli, A. Zaccaria, G. Baldacci, M. Polito, M. Rizzo, and S. Sabatini. What do central counterparties default funds really cover? A network-based stress test answer. *Journal of Network Theory in Finance*, 4(4):43–57, 2018. doi:[10.21314/JNTF.2018.047](https://doi.org/10.21314/JNTF.2018.047)
- [35] G. Cimini, T. Squartini, F. Saracco, D. Garlaschelli, A. Gabrielli, and G. Caldarelli. The statistical physics of real-world networks. *Nature Reviews Physics*, 1(1):58–71, 2019. doi:[10.1038/s42254-018-0002-6](https://doi.org/10.1038/s42254-018-0002-6)
- [36] M. Formichini, G. Cimini, E. Pugliese, and A. Gabrielli. Influence of technological innovations on industrial production: A motif analysis on the multilayer network. *Entropy*, 21(2):126, 2019. doi:[10.3390/e21020126](https://doi.org/10.3390/e21020126)
- [37] A. Gabrielli, R. Mastrandrea, G. Caldarelli, and G. Cimini. Grand canonical ensemble of weighted networks. *Physical Review E*, 99:030301, 2019. doi:[10.1103/PhysRevE.99.030301](https://doi.org/10.1103/PhysRevE.99.030301)
- [38] G. Rapisardi, A. Arenas, G. Caldarelli, and G. Cimini. Fragility and anomalous susceptibility of weakly interacting networks. *Physical Review E*, 99:042302, 2019a. doi:[10.1103/PhysRevE.99.042302](https://doi.org/10.1103/PhysRevE.99.042302)
- [39] G. Rapisardi, G. Caldarelli, and G. Cimini. Numerical assessment of the percolation threshold using complement networks. In L. M. Aiello, C. Cherifi, H. Cherifi, R. Lambiotte, P. Lió, and L. M. Rocha, editors, *Complex Networks and Their Applications VII*, pages 820–827, Cham, 2019b. Springer International Publishing. ISBN 978-3-030-05411-3. doi:[10.1007/978-3-030-05411-3_65](https://doi.org/10.1007/978-3-030-05411-3_65)
- [40] E. Pugliese, G. Cimini, A. Patelli, A. Zaccaria, L. Pietronero, and A. Gabrielli. Unfolding the innovation system for the development of countries: coevolution of science, technology and production. *Scientific Reports*, 9:16440, 2019. doi:[10.1038/s41598-019-52767-5](https://doi.org/10.1038/s41598-019-52767-5)
- [41] A. Patelli, A. Gabrielli, and G. Cimini. Generalized markov stability of network communities. *Physical Review E*, 101:052301, 2020. doi:[10.1103/PhysRevE.101.052301](https://doi.org/10.1103/PhysRevE.101.052301)
- [42] A. Ramadiah, D. D. Gangi, D. R. L. Sardo, V. Macchiati, T. P. Minh, F. Pinotti, M. Wilinski, P. Barucca, and G. Cimini. Network sensitivity of systemic risk. *Journal of Network Theory in Finance*, 5(3):53–72, 2020. doi:[10.21314/JNTF.2019.056](https://doi.org/10.21314/JNTF.2019.056)
- [43] M. Serafino, G. Cimini, A. Maritan, A. Rinaldo, S. Suweis, J. R. Banavar, and G. Caldarelli. True scale-free networks hidden by finite size effects. *Proceedings of the National Academy of Sciences*, 118(2), 2021. doi:[10.1073/pnas.2013825118](https://doi.org/10.1073/pnas.2013825118)
- [44] M. Dilucca, G. Cimini, S. Forcelloni, and A. Giansanti. Co-evolution between codon usage and protein-protein interaction in bacteria. *Gene*, 778:145475, 2021a. doi:[10.1016/j.gene.2021.145475](https://doi.org/10.1016/j.gene.2021.145475)
- [45] M. Dilucca, G. Cimini, and A. Giansanti. Bacterial protein interaction networks: connectivity is ruled by gene conservation, essentiality and function. *Current Genomics*, 22:14, 2021b. doi:[10.2174/1389202922666210219110831](https://doi.org/10.2174/1389202922666210219110831)
- [46] M. Bardoscia, P. Barucca, S. Battiston, F. Caccioli, G. Cimini, D. Garlaschelli, F. Saracco, T. Squartini, and G. Caldarelli. The physics of financial networks. *Nature Reviews Physics*, 3(7):490–507, 2021. doi:[10.1038/s42254-021-00322-5](https://doi.org/10.1038/s42254-021-00322-5)
- [47] G. Pontrelli, G. Cimini, M. Roversi, A. Gabrielli, G. Salina, S. Bernardi, F. Rocchi, A. Simonetti, C. Giaquinto, P. Rossi, and F. Sylos Labini. Prioritizing the first doses of sars-cov-2 vaccine to save the elderly: The case study of Italy. *Frontiers in Public Health*, 9:848, 2021. doi:[10.3389/fpubh.2021.684760](https://doi.org/10.3389/fpubh.2021.684760)
- [48] N. Vallarano, M. Bruno, E. Marchese, G. Trapani, F. Saracco, G. Cimini, M. Zanon, and T. Squartini. Fast and scalable likelihood maximization for exponential random graph models with local constraints. *Scientific Reports*, 11(1):15227, 2021. doi:[10.1038/s41598-021-93830-4](https://doi.org/10.1038/s41598-021-93830-4)
- [49] G. Cimini, R. Mastrandrea, and T. Squartini. *Reconstructing Networks. Elements in Structure and Dynamics of Complex Networks*. Cambridge University Press, 2021. doi:[10.1017/9781108771030](https://doi.org/10.1017/9781108771030)
- [50] V. Macchiati, G. Brandi, T. Di Matteo, D. Paolotti, G. Caldarelli, and G. Cimini. Systemic liquidity contagion in the European interbank market. *Journal of Economic Interaction and Coordination*, 17:443–474, 2021. doi:[10.1007/s11403-021-00338-1](https://doi.org/10.1007/s11403-021-00338-1)
- [51] G. Cimini, A. Carra, L. Didomenicantonio, and A. Zaccaria. Meta-validation of bipartite network projections. *Communications Physics*, 5(1):76, 2022. doi:[10.1038/s42005-022-00856-9](https://doi.org/10.1038/s42005-022-00856-9)

- [52] L. Cirigliano, G. Cimini, R. Pastor-Satorras, and C. Castellano. Cumulative merging percolation: A long-range percolation process in networks. *Physical Review E*, 105:054310, 2022. doi:[10.1103/PhysRevE.105.054310](https://doi.org/10.1103/PhysRevE.105.054310)
- [53] A. Mancini, A. Desiderio, R. Di Clemente, and G. Cimini. Self-induced consensus of Reddit users to characterise the GameStop short squeeze. *Scientific Reports*, 12(1):13780, 2022. doi:[10.1038/s41598-022-17925-2](https://doi.org/10.1038/s41598-022-17925-2)
- [54] A. Desiderio, G. Salina, and G. Cimini. Multiplex mobility network and metapopulation epidemic simulations of Italy based on open data. *Journal of Physics: Complexity*, 3(4):04LT01, 2022. doi:[10.1088/2632-072X/ac9a29](https://doi.org/10.1088/2632-072X/ac9a29)
- [55] A. Patelli, L. Napolitano, G. Cimini, and A. Gabrielli. Geography of science: Competitiveness and inequality. *Journal of Informetrics*, 17(1):101357, 2023a. doi:<https://doi.org/10.1016/j.joi.2022.101357>
- [56] A. Patelli, L. Napolitano, G. Cimini, E. Pugliese, and A. Gabrielli. Capability accumulation patterns across economic, innovation, and knowledge-production activities. *Scientific Reports*, 13(1):12988, 2023b. doi:[10.1038/s41598-023-29979-x](https://doi.org/10.1038/s41598-023-29979-x)

WORKING PAPERS

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