

Curriculum Vitae ¹ of Prof. **Rosario Nunzio MANTEGNA**

MANTEGNA Rosario Nunzio,

born in Palermo on 23/08/1960, married with two children, Italian citizenship.

Affiliation:

- Dipartimento di Fisica e Chimica - Emilio Segrè, Università di Palermo, Viale delle Scienze, Ed. 18, 90128 Palermo, Italy
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Education:

- Degree in physics at Palermo University received on 29/6/1984. Thesis: *Effetto della diffusione spettrale sulla cinetica di saturazione delle risonanze magnetiche (in Italian)*.
- PhD in physics. Palermo University March 1990. Thesis: *Processi stocastici e fenomeni caotici in sistemi non lineari a frequenza di microonde (in Italian)*.

Employment:

Present positions:

- Full professor of Applied Physics at the Dipartimento di Fisica e Chimica - Emilio Segrè, Palermo University. Since 30/12/2004
- Member of the External Faculty of the Complexity Science Hub Vienna, Wien, Austria. Since 4/2017.

Past positions:

- from 1/10/1989 to 31/1/1990 CNR fellow at *Istituto per le Applicazioni Interdisciplinari della Fisica* of Consiglio Nazionale delle Ricerche, Palermo.
- from 1/2/1990 to 31/1/1991 Post-Doc fellow at the *Max-Planck Institut für Quantenoptik* Munich (Germany) with an Advanced Fellowship NATO-CNR .
- from 14/10/1993 to 13/10/1994 Post-Doc at the *Center for Polymer Studies and Department of Physics* of Boston University, Boston MA , U.S.A. .
- from 17/10/1994 to 31/10/1999 Assistant professor at the *Dipartimento di Energetica ed Applicazioni di Fisica* of Palermo University.
- from 1/11/1999 to 29/12/2004 associate professor of Physics at the *Dipartimento di Energetica ed Applicazioni di Fisica* and at *Dipartimento di Fisica e Tecnologie Relative* of Palermo University.
- from 1/9/2012 to 31/8/2016 professor at the Center for Network Science and Department of Economics, Central European University, Budapest, Hungary.
- from 1/3/2016 to 28/2/2021 Honorary professor at the Department of Computer Science of University College London, London, UK.

Periods spent as Visiting Scientist

- Visiting Scholar at the Center for Polymer Studies of Boston University. Several visits of one week during the period December 1998- November 1999.
- Visiting Scientist of the MPI fuer Physik Komplexer Systeme, Dresden, Germany (June-July 2000 and May 2001).
- Visiting Scientist of the Santa Fe Institute, Santa Fe, New Mexico, USA, 17-23 March 2001.
- Visiting Scientist of the ETH Zürich, Zurich, Switzerland, 1-21 May 2011.
- Visiting professor at Department of Computer Science, UCL, London, UK, 27 June-2 July 2016 and 5-10 September 2016.

¹updated January 2023

- Visiting professor at Center for Network Science, Central European University, Budapest, Hungary, January-June 2017
- Visiting Scientist at the MICS (Mathematics and Computer Science) laboratory of CentralSupélec, Paris, France, October 2021.

Memberships

- Associate member of the Consiglio Nazionale delle Ricerche CNR- INFN -SOFT, Rome, Italy, 2006-2007.
- Associate member of the Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia (CNISM) since 2006.
- Associate member of the Istituto Nazionale per la Fisica della Materia (INFN) from 1995 to 2003.
- Associate member of the Istituto Nazionale per la Fisica Nucleare (INFN) from 2004 to 2006.
- Member of the American Physical Society 2000-2010.
- Member of the American Association for the Advancement of Science since 1997-2010.
- Member of the Italian Physical Society since 1985.
- Research associate at UCL Centre for Blockchain Technologies, University College London, London, UK. Since 2017.
- Member of the National Laboratory of Artificial Intelligence of Italian Consorzio Interuniversitario per l'Informatica (CINI). Since 2019.

Awards

- **Santa Chiara Prize** awarded by the Scuola Superiore Santa Chiara of the University of Siena for a *Santa Chiara Chair: Multidisciplinary Teaching Award in "Econophysics"* - academic year 2008/09.
- **Italian Knowledge Leader 2022** awarded by the title of Italian Knowledge Leader 2022 at the second edition of Italian Knowledge Leaders organized by Convention Bureau Italia and ENIT and held in Milan, Italy on December 2nd, 2022.

Educational planning

- Chairman of the PhD school in Applied Physics of Palermo University from 2002-2003 to 2008-2009.
- Chairman of the Master "Quantitative methods in risk management" Palermo University 2003-2004.
- Member of the International Advisory Board of the European School of Advanced Study on "Methods for Management of Complex Systems" 2000-2004, University of Pavia.
- Member of the group of Faculty setting the PhD school on Complex Networks at Central European University AY 2014-2015.
- Chairman of the Post-Lauream Course on "Econophysics and Computational Finance" held at Palermo University AY 2021-2022.
- Deputy Chairman for Palermo University of the Double Degree agreement between the "Master Degree in Physics" awarded by the University of Palermo and the "Master Degree Programme in Physical and Chemical Sciences" awarded by the University of Turku, Finland from AY 2022-2023 to AY 2027-2028.
- Member of the Committee of the "Path of excellence" offered to Bachelor students of the Physics curriculum of Palermo University from AY 2021-2022 to AY 2023-2024.

Teaching:

Undergraduate courses

- *Physics* course at the School of Medicine of Palermo University. From academic year 1999-2000 to 2017-2018.
- *Physics* course at the bachelor in Computer Science of Palermo University. From academic year 2018-2019 to today.
- *Deterministic Chaos* special course for the "Path of excellence" of the Bachelor in Physics of Palermo University. AY 2021-2022 .

Graduate courses

- *Rare events and risk management* at the Master “Quantitative methods in risk management” Palermo University 2003-2004.
- *Statistical physics* at the PhD school in Applied Physics of Palermo University 2003-2004.
- *Bioinformatics applied to genomics and proteomics* at the School of Medicine of Palermo University from 2003-2004 to 2008-2009.
- *Empirical analysis and modeling of financial complex systems* at PhD School (Perfezionamento) in Financial mathematics of the Scuola Normale Superiore, Pisa, Italy 2009-2010 and 2010-2011.
- Interdisciplinary Lecture Series, Freiburg Institute for Advanced Studies, Albert-Ludwigs-Universität, Freiburg, Germania, May 2010.
- *Economic Networks* at Central European University, Budapest, Hungary from 2012-2013 to 2015-2016.
- *Empirical Finance* at Central European University, Budapest, Hungary from 2012-2013 to 2015-2016.
- *Similarity Networks* at Central European University, Budapest, Hungary from 2012-2013 to 2015-2016.
- *Statistical Methods in Network Science and Data Analysis* at Central European University, Budapest, Hungary from 2013-2014 to 2016-2017.
- *Agent Based Models* at Central European University, Budapest, Hungary from 2013-2014 to 2016-2017. Co-taught with Janos Kertesz and Janos Torok.
- Seminars at the course *Complex networks: new paradigms for understanding our connected world* at Scuola Superiore di Catania, Catania, Italy, Academic years 2015-2016, 2019-2020, 2020-2021.
- *Empirical Finance II* at Pallas Athéné Domus Scientiae Foundation, Budapest, Hungary. February-March 2017.
- *Econophysics* course at the Master in Physics and at the Master in Computer Science of Palermo University. From academic year 2016-2017 to 2019-2020.
- *Complex Networks: Models* course at the Master in Computer Science and at the Master in Physics of Palermo University. From academic year 2018-2019 to 2020-2021.
- *Statistical Physics* course at the Master in Physics of Palermo University. From academic year 2020-2021.
- *Econophysics* course at the PhD in Complex Systems for Physical, Socio-economic and Life Science of University of Catania, Academic years 2017-2018, 2018-2019, and 2019-2020.

Research activity

Rosario N. Mantegna is one of the leading pioneers in the field of econophysics and information filtering on networks. He started to work in the area of the analysis and modeling of social and economic systems with tools and concepts of statistical physics and network theory as early as in 1990. He published the first econophysics paper in a physics journal in 1991. He co-authored the first econophysics paper in Nature in 1995. In 1999 he co-authored the first book on econophysics. Just after Mantegna obtained his tenured position in 1999, he founded the *Observatory of Complex Systems*, a research group of the Dipartimento di Fisica e Chimica of Palermo University. Mantegna has participated in several international research projects contributing to the management and coordination of them. Examples are the COST P10 action “Physics of Risk”, the GIACS (General Integration of the Applications of Complexity in Science) coordination action of the European Union, the CRISIs project of EU, and the INET project on systemic risk interlinkages. Within the GIACS coordination action he promoted the “Jerusalem Declaration on Data Access, Use and Dissemination for Scientific Research”.

Main research projects

- Principal investigator of the Marie Curie Development Host fellowship MCFH-2001-00454 on *Statistical physics study on non-coding DNA regions of complete genomes* 2001. Funding 110,000 euro.
- Principal investigator of the Palermo INFM Unit of the MIUR-FISR project 2001 on *A new approach on “drug design”. From statistical mechanics to the screening of antiviral drugs*. National principal investigator prof. Paolo Carloni, Sissa, Italy. Funding 25,000 euro.

- Principal investigator of the INFN Palermo Unit of the FIRB project on *Self-organized networks and nonlinear chaotic dynamics for the modeling and control of complex systems*. National principal investigator prof. Luigi Fortuna, Catania University. Funding 118,000 euro.
- National principal investigator of the MIUR project, *High-frequency dynamics in financial markets*. Funding 770,000 euro.
- Principal investigator of the CNR-INFN-SOFT Unit of the European Union project *Human behavior through dynamics of complex social networks: an interdisciplinary approach (DYSONET)*, a STREP project of FP6 NEST Pathfinder. Principal investigator prof. Panos Argyrakis of Thessaloniki University. Funding 200,000 euro.
- Principal investigator of the CNISM Unit of the European Union project *General Integration of the Applications of Complexity in Science (GIACS)*, a Coordination of FP6 NEST Pathfinder. Principal investigator prof. Sorin Solomon of Hebrew University. Funding 70,000 euro.
- Principal investigator of the Palermo University Unit of the national PRIN 2007TKLTSR project entitled *Stylized facts and resulting strategies of market participants in real and artificial financial markets*. Principal investigator prof. Paolo Pellizzari, University of Venice. Funding 18,000 euro.
- Principal investigator of the Institute for New Economic Thinking 2011 Spring project “New tools in the credit network modeling with agents’ heterogeneity”
<http://ineteconomics.org/grants/new-tools-credit-network-modeling-heterogenous-agents>
Funding 125,000 US dollars.
- Principal investigator of the Palermo University Unit of the EU project “Complexity Research Initiative for Systemic Instabilities” (CRISIS) 2011-2013. Funding 180,726 euro.
- Principal investigator of the PRIN 2017 project “Stochastic forecasting in complex systems” (STOFOCS) 2019-2023. Funding 902,845 euro.

Mentoring

I have supervised students, graduate students, post-docs and visiting scientists: Fabio Principato, Giovanni Alberto Vacanti, Dominique Persano-Adorno, Fabrizio Patti, Giovanni Bonanno, Dr. Fabrizio Lillo, Dr. Salvatore Miccichè, Ciro Minichini, Dr. Markus Kollmann, Adriana Prest Mattedi, Vincenzo Rinella, Marco Spanò, Dr. Michele Tumminello, Dr. Rudi Schaefer, Dr. Adam Ponzi, Antonios Garas, Dr. Vianney Desoutter, Prof. J. Tadeu Lunardi, Dr. Angelo Carollo, Dong-Ming Song, Christian Bongiorno, Dr. Luca Marotta, Dr. Davide Gurrera, Dr. Rosario Onofrio Battaglia, Federico Musciotto, Sandor Albert, Zhamilia Arzykulova, Ando Balint, Andras Borsos, Tamer Khraisha, Forough Hassanibesheli, Matteo Milazzo, Federico Ticali.

Community service

- Member elected of the steering committee (Giunta) of the Department of Physics and Chemistry - Emilio Segrè, University of Palermo. From 2019 to 2021 and from 2021 to 2023.
- Deputy director for internationalisation of Department of Physics and Chemistry - Emilio Segrè, University of Palermo. From 2019 to 2021 and from 2021 to 2023.
- Member elected of the steering committee (Giunta) of the Italian Physical Society of Statistical Physics (Società Italiana di Fisica Statistica – SIFS). From 2020 to 2022 and from 2022 to 2025.

Management of international research projects

- Italian representative of the *Management Committee* of the COST P10 action “Physics of Risk” of the European Union. Chairman of the Workgroup WG1 “Physics of Risk” of the same action (2003-2005)
<http://gisc.uc3m.es/COST-P10/members.html>.
- Member of the *Steering Committee* of GIACS (General Integration of the Applications of Complexity in Science) coordination action of the European Union
<http://www.giacs.org/>.
- Proposer of the “Jerusalem Declaration on Data Access, Use and Dissemination for Scientific Research”.

Chairman of International Schools and Congresses

- Chairman of the “International Workshop on Econophysics and Statistical Finance”, Palermo, Italy, Settembre 28-30, 1998.
- Co-Director of the International School, “The Mathematical Modeling of Financial Markets and Econophysics”, Siena 17-23 Marzo 2000, Italia
- Chairman of the “Minisymposium on Econophysics” of the Conference “Dynamics Days Europe” Dresden 5-8 Giugno 2001, Germany.
- Chairman of the Session “Econophysics and Risk Management” of the Conference “INFMeeting” 2002, Bari, Italy 24-28 Giugno 2002.
- Chairman of the Workshop “GRID in Finance 2006”, Palermo, Italy, 3-4 February 2006.
- Co-Chairman of the “International School of Complexity on Physics and Socio-Economic Phenomena”, 17-23 September 2006, Erice, Italy.
- Chairman of the 4-th Annual Meeting COST Action P10 - “Physics of Riskh- Palermo, Italy, 21-23 Sep 2007.
- Chairman of the Workshop “DYSONET meetingh- Palermo, Italy, 25-27 November 2007.
- Chairman of the GIACS Conference “Data in Complex Systemsh- Palermo, Italy, 7-9 April 2008.
- Co-Chairman del GIACS Focused Workshop on “Large databases in biomedical complex systems research” Jerusalem, Israel, September 15-16 2008.
- Co-Chairman del GIACS Focused Workshop on “Large databases in social and economic complex systems research” Jerusalem, Israel, September 17-18 2008.
- Co-Director of the “International School on Multidisciplinary Approaches to Economic and Social Complex Systems”. Siena, June 27 - July 3, 2010.
<http://www.unisi.it/eventi/schoolESCS/>
- Co-Director of the Enrico Fermi International School on “Computational Social Science and Complex Systems”. Varenna, Italy, July 16 - 21, 2018.
- Co-Chairman of the “Econophysics Colloquium 2018” Palermo, Italy, September 12-14 2018.
- Co-Director of the “International School of Complexity on Physics and Socio-Economic Phenomena” course on “Stochastic Forecasting in Complex Systems”, 25-31 August 2022, Erice, Italy.
- General Chair of the “11th International Conference on Complex Networks and Applications”, 7-10 November 2022, Palermo, Italy.

Editorial activity

- Associate Editor of the **International Journal of Theoretical & Applied Finance**, World Scientific Publishing (2003-2006).
- Member of the Editorial Board of the **International Journal of Theoretical & Applied Finance**, World Scientific Publishing (2007-2020).
- Member of the Editorial Board of **Quantitative Finance**, Taylor & Francis Group (since Journal foundation).
- Member of the Editorial Board of **EPJ Data Science**, a SpringerOpen Journal (since Journal foundation).
- Area Editor of **High Frequency**, (2017-2019) Wiley Journal.
- Associate Editor of **Frontiers in Artificial Intelligence in Finance**, a Frontiers Journal (since 2018).
- Review Editor of **Interdisciplinary Physics in Frontiers in Physics**, a Frontiers Journal (since 2020).
- Member of the Editorial Board of **Entropy**, a SpringerOpen Journal (since 2020).
- Academic Editor of **Complexity**, a Hindawi/Wiley partnership (since 2021).
- Member of the Editorial Board of **New Journal of Physics**, a IOP Science Journal (since 2021).

Peer review

- Peer review for the European Research Council, Research Executive Agency of the European Commission, Seven Framework of the European Union, National Science Foundation USA, Natural Sciences and Engineering Research Council of Canada, la Swiss National Science Foundation, ETH Zurich Research Commission, Volkswagen Stiftung, Czech Science Foundation, Research Corporation Tucson, Arizona USA, Academic Press, Cambridge University Press, Oxford University Press, Princeton University Press and for the international journals: Bioinformatics, BMC bioinformatics, BMC systems biology, Chaos, ComPlexUs, European Physical Journal B, Europhysics Letters, Fractals, Journal of Biological Physics, Journal of Physics A: Mathematical and General, Journal of Statistical Physics, Nature, Nature Physics, PNAS, PLoS One, Physica A, Physica D, Physical Review A, Physical Review B, Physical Review E, Physical Review X, Physical Review Letters, Physics Letters A, Journal of Economics Dynamics and Control, Quantitative Finance, Science, International Review of Financial Analysis, The Journal of International Trade & Economic Development, Entropy.

Main invited lectures

1. Ultra-Slow convergence to a Gaussian: The Truncated Lévy Flight. International Workshop Lévy Flights and Related Phenomena in Physics, Nice, France, 26-30 June 1994.
2. Linguistic Analysis of Coding and noncoding DNA. International Workshop on Nonlinear Dynamics, Fractality and Selforganization of Complex Systems, Würzburg, Germany, 1-3 October 1994.
3. Experimental Study of the Escape Times in a Periodically Driven Metastable State. Adriatico Research Conference on Randomness, Stochasticity and Noise, Trieste, Italy, 22-25 August 1995.
4. Scaling in Finance and Analogies (and Differences) with Turbulence, Seminario alla International School of Physics “Enrico Fermi” Course CXXXIV “The Physics of Complex Systems”, Varenna, Italy, 9-19 July 1996.
5. Limit Theorems and Price Changes in Financial Markets, Minerva Workshop on Mesoscopics, Fractals and Neural Networks, Eilat, Israel 24-27 March 1997.
6. Physics Investigation of the Dynamics of a Stock Market Index, StatPhys-Taipei-1997, Taipei, Taiwan Agosto 4-11 1997.
7. Information and Hierarchical Structure in Financial Markets, Europhysics Conference on Computational Physics Modelling Collective Phenomena in Complex Systems, Granada, Spain, September 22-5, 1998.
8. Applications of statistical mechanics to finance, NATO Advanced Workshop on “Statistical physics applied to practical problems”, Budapest, Hungary May 19-22, 1999.
9. Mixing of information in financial markets, International WE-Heraeus Workshop on “Facets of Universality in Complex Systems: Climate, Biodynamics and Stock Markets”, Giessen, Germany, June 7-10 1999.
10. Empirical results in economics and finance obtained using statistical physics methods, “Beyond equilibrium and efficiency”, 18-20 Maggio 2000, Santa Fe Institute, Santa Fe, New Mexico, USA.
11. Hierarchical structures in complex systems - from DNA to financial markets, “Euroattractor 2000”, 6-15 Giugno 2000, Polish Academy of Sciences, Varsavia, Polonia.
12. Variety, volatility, and correlation of stock pairs in financial markets, “Empirical science of financial fluctuations”, 15-17 Novembre 2000, Nihon Keizai Shimbun, Inc. (Nikkei), Tokyo, Japan.
13. Levels of Complexity in Financial Markets, “NATO Advanced Research Workshop on Application of Physics in Economic Modelling” 8-10 February 2001, Prague, Czech Republic.
14. Degree of coherence in linear and nonlinear regimes of stochastic resonance, “Coherent Evolution in Noisy Environments”, 21-25 May 2001, Dresden, Germany.
15. Stylized facts and modeling of volatility in financial markets, “14th Marian Smoluchowski Symposium on Statistical Physics”, 9-14 September 2001, Zakopane, Poland.
16. Variety of Returns in Financial Markets, “NEW - New Paradigms for the New Millennium”, 13-15 September 2001, Salerno, Italy.
17. Econofisica e finanza quantitativa, “LXXXVII Congresso Nazionale Società Italiana di Fisica”, 24-29 September 2001, Milano, Italia.
18. Comparative genomics study of inverted repeats in prokaryotes, “CECAM Workshop - From DNA sequence to function”, 27-29 September 2001, Lyon, France.

19. Lévy Flights in Financial Markets, “International Congress on Estudios interdisciplinarios y complejidad”, 22-26 October 2001, Mexico City, Mexico.
20. Volatility in financial markets: stochastic models and empirical results, “Horizons in Complex Systems”, 5-8 December 2001, Messina, Italy.
21. Omori law after a financial market crash, “Workshop on economics with heterogeneous interacting agents (WEHIA 2002)”, 30 May -1 June 2002, Trieste, Italy.
22. Dynamics of markets after a financial crash, “Workshop on Stochastic systems: from randomness to complexity”, 26 July -1 August 2002, Erice, Italy.
23. Behavior of markets at and just after a financial crash, “International Econophysics Conference”, 28-31 August 2002, Nusa Dua, Bali, Indonesia.
24. Cross-sectional correlations and variety of a stock portfolio, The second Nikkei econophysics research workshop “Toward control of economic change - Application of econophysics”, 12-14 Novembre 2002, Nihon Keizai Shimbun, Inc. (Nikkei), Tokyo, Japan.
25. Complexity in financial markets, “International Nonlinear Sciences Conference”, 7-9 Febbraio 2003, Vienna, Austria.
26. Variety of a portfolio of stocks during and just after a financial crash, “Complexity 2003”, 7-11 Maggio 2003, Aix-en-Provence, France.
27. Hierarchical Structure of a Financial Portfolio in Real and Artificial Markets, “Euro Informs Joint International Meeting”, 6-10 Luglio 2003, Istanbul, Turkey.
28. Minimal spanning tree networks in real and artificial markets, “Midterm Conference COSIN”, 1-5 Settembre 2003, Roma, Italy.
29. New stylized facts in financial markets: The Omori law and price impact of a single transaction in financial markets, “Frontier Science 2003”, 8-12 Settembre 2003, Pavia, Italy.
30. Shape of the return probability density function and extreme values statistics, “International Workshop on Risk and Regulation”, 11-13 Settembre 2003, Budapest, Hungary.
31. Cross-sectional (ensemble) analysis of asset return dynamics in generic and specialized stock portfolios, “NEXT 2003”, 22-27 Settembre 2003, Villasimius, Cagliari, Italy.
32. Complexity in financial markets, “New Materials and Complexity”, 3-7 Novembre 2003, Canberra-Kiolo, Australia.
33. Financial networks from correlation-based clustering techniques, “International Workshop on Complexity, Metastability and Nonextensivity”, 20-26 July 2004, Erice, Italy.
34. A class of RNA secondary structures in complete genomes of bacteria, “International Workshop on Noise in Condensed Matter and Complex Systems”, 26-29 July 2004, Terrasini (Palermo), Italy.
35. Emergence of complexity and non-ergodicity in financial markets, “SPHINX Econophysics Workshop”, 27-29 September 2004, Oxford, UK.
36. Filtering of economic information from financial time series, “Workshop on Volatility of financial markets: theoretical models, forecasting and trading”, 18-29 October 2004, Leiden, Netherland.
37. Financial networks from correlation-based clustering techniques, “XIII International “Tor Vergata” Conference on Banking and Finance: Transparency, governance and markets”, 1-3 December 2004, Rome, Italy.
38. Levels of complexity in financial markets, “Thirteenth annual symposium of the Society for nonlinear dynamics and econometrics”, March 31- April 1 2005, London, UK.
39. Ultrametric matrices and factor models, “13th General Conference of the European Physical Society”, 11-15 July 2005, Bern, Switzerland.
40. Hierarchically nested time series models from dendrograms, “International Workshop on Econophysics of Stock Markets and Minority Games”, 14-17 February 2006, Kolkata, India.
41. Individual decisions under risk: an investigation of observational economics, “3rd Annual meeting COST ACTION-P10 Physics of Risk”, 13-16 May 2006, Vilnius Lithuania.

42. RNA secondary structures in complete genomes of bacteria and viruses, “Biophys 06”, 6-8 September 2006, Arcidosso, Italy.
43. Ecology of trading firms in a financial market, “International School of Complexity on Physics and Socio-Economic Phenomena”, 17-23 September 2006, Erice, Italy.
44. E. Majorana’s article on “The value of statistical laws in physics and statistical sciences”, International “Conference on Ettore Majorana’s legacy and the Physics of the XXI century”, 5-6 October 2006, Catania, Italy.
45. Extreme events in correlation based clustering procedures, “International Seminar and Workshop on Extreme Events in Complex Dynamics”, October 23-November 02, 2006, Dresden, Germany.
46. Research carried out and applications run in the EGRID infrastructure, “The EGEE Project meets the Finance sector”, Pisa, Italy 24-26 January 2007.
47. Ecology of firms in a financial markets, “71st Annual meeting Verhandlungen der Deutschen Physikalischen Gesellschaft”, 26-30 March 2007, Regensburg, Germany.
48. Hierarchically nested factor model from multivariate data, “CTNEXT07: Complexity, Nonextensivity and Metastability”, 2-5 July 2007, Catania, Italy.
49. Scaling laws, specialization of strategies and herding of heterogeneous trading firms in a financial markets, “Econophysics Colloquium and beyond”, 27-29 September 2007, Ancona, Italy.
50. Correlation based networks in finance, “Italian-Israeli meeting: Complex Networks in Biology and Engineering. From Principles to Applications”, 24-25 October 2007, Tel Aviv, Israel.
51. Specialization and herding behavior of trading firms in a financial market, “Workshop Networks, Complexity & Competition, 2-4 May 2008, Bled, Slovenia.
52. Correlation, hierarchies and networks in economic complex systems, “Transdisciplinary Perspectives on Economic Complexity”, May 17, 2008, James Madison University, Harrisonburg, USA.
53. Networks in biological systems and data mining, “Calcolo Scientifico nella Fisica italiana, 27-30 Maggio 2008, Rimini, Italy.
54. Correlation-based Networks in Finance, “International Workshop and Conference on Complex Networks and their Applications”, 23-27 June 2008, Norwich, UK.
55. Overview of market ecology studies, “First Steps Toward Understanding Market Ecologies”, July 28- August 1 2008 SantaFe, NM, USA.
56. Specialization, strategic and herding behavior of market members in a financial markets, “The Physics Approach to Risk: Agent-Based Models and Networks, October 27-29, 2008, ETH Zurich, Switzerland.
57. Econofisica, “Convegno Scienze Ibride all’interno di Pianeta Galileo”, 10 Novembre 2008, Florence, Italy.
58. Correlation-based Networks in Finance, “International Conference on Complex Networks: The Past 10 Years and Future”, 19-22 December, 2008, Seoul National University, Seoul, Korea.
59. Correlation, Hierarchies, and Networks in Financial Markets, “APFA 7th International Conference”, 1st-5th March 2009, Tokyo, Japan.
60. Specialization in resulting strategies and herding behavior of market members in a financial market, “The Science of Complexity”, 29 March - 1st April, 2009 Eilat, Israel.
61. Econophysics investigation of high frequency financial data, “Modeling High Frequency Data in Finance”, Stevens Institute of Technology, 10- 12 July 2009, Hoboken, New Jersey, USA.
62. Specialization, strategic and herding behavior of market members in a financial market, “Complexity, Mathematics and Socio-Economic Problems”, Bielefeld, Germany, August 31 - September 12, 2009.
63. Specialization, Strategic and Herding Behavior of Market Members and Individual Investors in Financial Markets, International Workshop “Market Design and Structure”, Santa Fe Institute, 10- 12 September 2009, Santa Fe, New Mexico, USA.
64. Empirical investigation of book dynamics, first passage time and taxonomy of market members, Econophysics Colloquium, 25-31 October 2009, Erice, Italy.

65. Empirical Investigations of Economic and Social Complex Systems, Symposium on Complex Systems and Materials, 20 November 2009, Messina, Italy
66. Empirical investigations of economic and social complex systems 4th International Nonlinear Science Conference 2010 - Palermo 15-17 March 2010, Palermo, Italy
67. Challenges in econophysics research Econofis' 10 - Encontro de Econofisica 25-26 March 2010, São Paulo, Brasil
68. Correlation and hierarchies in financial markets, International School of Physics "Enrico Fermi", Course CLXXVI - "Complex materials in physics and biology" 29 June - 9 July 2010, Varenna, Italy
69. Co-occurrence networks in social and economic systems, The XXIV International Conference on Statistical Physics of the International Union for Pure and Applied Physics (IUPAP), 19-23 July, 2010, Cairns, Australia
70. Co-occurrence of trading decisions of heterogeneous single investors acting in a financial market, Unwinding Complexity: Statistical Physics Perspectives on Complex Systems and Complex Materials 24 - 26 July, 2010, Port Douglas, Australia
71. Investigation of the impact of news on individual trading decisions of different classes of investors, Thomson Reuters News Research Roundtable, November 12, 2010, Thomson Reuters, New York City, U.S.A.
72. Correlation based networks in financial systems, Workshop on "Applications of statistical mechanics to complex systems" On the occasion of the 60th birthday of Janos Kertesz, 11-13 January, 2011, Budapest, Hungary
73. Trading decisions of heterogeneous investors acting in a financial market, Swissquote & EPFL day on quantitative finance, April 19, 2011, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
74. Analysis and modeling of financial markets: The approach of Econophysics, 3rd Porto Meeting on MATHEMATICS for INDUSTRY, 28th to 30th April 2011, Porto, Portugal
75. New approaches in the investigation of correlations of stock returns and index returns, International Conference on Econophysics, June 4-6, 2011, East China University of Science and Technology, Shanghai, China
76. Statistically validated networks in financial and economic systems, 16th Annual Workshop on Economic Heterogeneous Interacting Agents, June 23-25 2011, Polytechnic University of Marche, Ancona, Italy
77. Extracting similarity information from word association networks, Econophysics Colloquium, ECCS' 2011, September 12-16 2011, Vienna, Austria
78. Econophysics and social research with large sets of data, Focus session: Big Data, 76th Annual Meeting of the DPG and DPG Spring Meeting, March 26 2012, Berlin, Germany.
79. Statistically validated networks of market members trading at the LSE electronic and Off-book market venues, The 4th Annual Modeling High Frequency Data in Finance, July 19-22 2012, New York, USA.
80. Stylized facts in the credit market, Latsis Symposium 2012 Economics on the Move, ETH Zurich, September 11 2012, Zurich, Switzerland.
81. Keynote: Statistically validated networks of market members trading at the LSE electronic and dealers' market, Econophysics and networks across scales, May 27-31 2013, Leiden, the Netherlands.
82. Credit markets as networked markets: the cases of bank-firm credit relationships in Japan and eMID interbank market, FNet 2013, July 17-19, Kyoto, Japan.
83. Opening talk: Statistically validated networks of market members trading at the LSE electronic and dealers' market, Econophysics Colloquium 2013 & Asia Pacific Econophysics Conference 2013, July 29-31, Pohang, Korea.
84. Keynote: Evolution of correlation structure of stock indices, 11th Financial Systems Engineering and Risk Management, October 18-20 2013, Shanghai, China.
85. Special evening lecture: An overview of more than 20 years of Econophysics, Fysica 2014, annual physics conference of the Netherlands' Physical Society (NNV), April 1st 2014, Leiden, the Netherlands.
86. Bank-firm credit network in Japan: An analysis of a bipartite network, International Conference on Econophysics and Asia-Pacific Econophysics Conference, May 31-June 2 2014, Shanghai, China.
87. Keynote: Covariance matrix estimators and portfolio optimization, Actuarial and Financial Risk Theory with Applications, ASCE-ICVRAM-ISUMA July 13-16 2014, Liverpool, UK.

88. Keynote: Similarity-based & Statistically Validated Networks in Finance, Financial Risk & Network Theory, Cambridge Centre for Risk Studies Seminar, September 23 2014, Cambridge, UK
89. News and individual investment decisions, Social modeling and simulations + Econophysics Colloquium, Kobe Japan November 4-6 2014.
90. Patterns of high-frequency trading networks at NASDAQ OMX Helsinki, Annual Financial Market Liquidity Conference 2014, Budapest November 20-21 2014.
91. Networks in complex human systems, Italy-Israel meeting Let the complex be simple, Tel Aviv, Israel December 1-2 2014.
92. Networks in Finance, Perm Winter School 2015, Perm Russia February 14-15 2015.
93. Detecting hierarchical structures and networked relationships in complex systems systems, Complexity in Economics and Finance, 10th Tinbergen Institute Conference, Amsterdam May 18-20 2015.
94. Proximity based networks and statistically validated networks in social and economic systems, Lipari School on Computational Complex Systems, Lipari Island, Italy July 12-18 2015.
95. Proximity-based networks and statistically validated networks in complex systems 60th World Statistics Congress ISI 2015, 26-31 July, Rio de Janeiro, Brazil.
96. Pattern of investment of single investors at the Nordic Stock Exchange, Eight Polish Symposium on Econo- and Sociophysics, 4-6 November 2015, Rzeszow, Poland.
97. Proximity-based networks and filtered networks in economic and financial systems, CFE-CMStatistics 2015, 12-14 December 2015, London, UK.
98. Financial and economic networks, Perm Winter School 2016, Perm, Russia February 4-5 2016.
99. Heterogeneity in complex systems, Visions for complexity, Opening conference of the Complexity Science Hub Vienna, May 23 2016, Vienna, Austria.
100. Dynamics of synchronicity of trading decisions of investors at the Nordic Stock Exchange, Econophysics Colloquium 2016 - 27-29 July 2016 Sao Paulo, Brazil.
101. Proximity-based and statistically validated networks networks in complexity science and econometrics, Modern econometric tools and applications - 22-24 September 2016, Nizhny Novgorod, Russia.
102. Time evolution of groups of investors with similar pattern of investment, 102nd National Congress of Italian Physical Society, 26-30 September 2016, Padova, Italy.
103. Trading networks of market members at NASDAQ Nordic OMX exchanges, 7 High Frequency Conference, Stevens Institute of Technology, 3-5 November 2016, Hoboken, New Jersey, USA.
104. Econophysics: concepts, results, and perspectives of a hybrid science, 2nd Workshop of the Econophysics Network, School of Business, University of Leicester, 7 March 2017, Leicester, UK.
105. Long term temporal dynamics of trading decisions of investors of a high liquid stock: a statistically validated network approach, International Conference on Econophysics, East China University of Science and Technology, 27-29 May 2017, Shanghai, China.
106. Core of communities in bipartite networks, 9th Summer Solstice Conference, University of Catania 21-23 June 2017, Catania, Italy.
107. Bootstrap validation of proximity based networks, 13th Econophysics Colloquium & 9th Polish Symposium on Physics in Economy and Social Sciences, 5-7 July 2017, Warsaw, Poland.
108. Price discovery and market liquidity at NASDAQ Nordic OMX exchanges, Statistical Physics for the Digital Economy, 11-12 July 2017, Corf, Greece.
109. Power-laws and heterogeneity in financial systems, Transdisciplinary extreme risk modelling workshop – Skema 8 September 2017, Sophia Antipolis - France
110. Social dynamics of a financial bubble, 3rd International Conference on EconoPhysics. University of Thessaly 28-30 September 2017, Volos, Greece.
111. Can an Anthropology of Knowledge help Complexity Science?, Complexity: Where do we go from here? - Complexity Science Hub, 24 May 2018 Vienna, Austria.

112. Social anatomy of a financial bubble, 2nd International Conference on Cliometrics and Complexity, 4-5 June 2018 Lyon, France.
113. Heterogeneity in complex systems. Type of heterogeneity and global risk of the system, 2nd workshop on extreme risk modelling – Skema 7 September 2018, Sophia Antipolis - France.
114. Keynote: Long-term ecology of investors in a financial market. Conference on Complex Systems 2018, Aristotle University of Thessaloniki, September 23-28, 2018, Thessaloniki, Greece.
115. Statistically validated networks in complex systems, Statistical Validation Methods for Complex Systems, Satellite meeting of the Conference on Complex Systems 2018, Aristotle University of Thessaloniki, September 27, 2018, Thessaloniki, Greece.
116. Keynote: 20 years of correlation network analysis and its impact on portfolio management, Frankfurt summit on network analysis, Frankfurt School of Finance & Management, 25 October 2018, Frankfurt am Main, Germany.
117. Long-term ecology of investors in a financial market, Evolution and Financial Markets, Nortons Woods Conference Center at the American Academy of Arts and Sciences, 26 October 2018, Cambridge MA, USA.
118. Trading Networks and Statistically Validated Networks in a Fully Electronic Stock Market, WEHIA 2019 – City, University of London, 24-26 June 2019.
119. Trading Networks in Financial Markets, FENS 2019 – NCBJ, Otwock - Swierk, Poland, July 3-5th, 2019.
120. Noise and information in physics, finance and complex systems, Physics challenges for Machine Learning and Network Science, Queen Mary University London, 3-4 September 2019.
121. Networked structure in fully electronic stock markets. An analysis of different markets at different time periods, Econophysics Colloquium 2019, Nanyang technological University, Singapore 30 September - 4 October 2019.
122. Social anatomy of a financial bubble, Convegno SM&FT 2019 - The XVIII Workshop on Statistical Mechanics and nonperturbative Field Theory - 11-13 December 2019 Palazzo Ateneo Universit "Aldo Moro" Bari.
123. High Frequency Trading and Networked Markets, Evolutionary Models of Financial Markets, MIT Laboratory for Financial Engineering, June 18-19, 2020.
124. Social anatomy of a financial bubble, FENS 2021 (Online conference Krakow, Poland) July 2nd 2021.
125. High frequency trading and networked markets, WEHIA 2021 Online Conference, 10 September 2021.
126. High frequency trading and networked markets, Statistical Validation of Complex Networks, Advances in Quantitative Methods for Financial Markets, 17 - 18 February 2022, Almeira, Spain.
127. Statistical Validation of Complex Networks, From water to colloidal water: a journey into liquids and soft matter physics 6 - 8 June 2022 University of Rome "La Sapienza", Rome, Italy.
128. Statistical Validated Hypergraphs, SM&FT 2022 - The XIX Workshop on Statistical Mechanics and nonperturbative Field Theory - 19-21 December 2022, Universit "Aldo Moro" Bari.

Publications

The book Rosario N. Mantegna and H. Eugene Stanley, *An Introduction to Econophysics: Correlations and Complexity in Finance*, Cambridge University Press, Cambridge UK 2000 ISBN 0 521 62008. Translated in Japanese from the publisher EconomistSha, Inc., in Polish from the publisher Polish Scientific Publishers PWN, in Indonesian from the publisher Pearson Education Asia, in Russian from the publisher URSS and in Chinese from the publisher Lianjing Publishing House. The book has obtained 5574 citations according to Google Scholar.

Author of 148 articles published in international journals of the Web of Science database of Clarivate, 3 articles published in international journals not inserted in Web of Science e 40 articles published in conference proceedings or book chapters. The publications indexed by Web of Science have received 12164 citations (11716 without self-citations). The value of the WoS h-index is 51. Google Scholar citations are 27820, Google Scholar h-index is 67 and i10-index is 139.

Editor of six proceedings collections and two focus issues. Proceedings collections: (i) Rosario N. Mantegna editor, Proceedings of the International Workshop on Econophysics and Statistical Finance held at University of Palermo, Italy 28-30 September 1998, Special Issue of *Physica A* 269, 1-187 (1999), (ii) H.E. Stanley, M. Ausloos, J.

Kertész, R.N. Mantegna, J.A. Scheinkman and H. Takayasu editors, Proceedings of the International Econophysics Conference, Bali 29-31 August 2002, Special Issue of *Physica A* 324, 1-454 (2003), (iii) Stefano Cozzini, Stefano d’Addona and Rosario N. Mantegna editors, Proceedings of the 1st International Workshop on Grid Technology for Financial Modeling and Simulation held in Palermo, Italy 3-4 February 2006. PoS at Sissa ISSN 1824-8039 <http://pos.sissa.it/>,(iv) János Kertész, Stefan Bornholdt and Rosario N. Mantegna editors, Proceedings of SPIE Noise and Stochastics in Complex Systems and Finance held at Firenze, Italy 21-24 May 2007 Proceedings of SPIE, 0277-786X Vol. 6601 (2007), (v) János Kertész, Rosario N. Mantegna, and Salvatore Miccichè editors, Proceedings of the International School of Physics “Enrico Fermi” - Course 203, Computational Social Science and Complex Systems, IOS Press, Amsterdam, The Netherland (2019). ISSN 0074-784X, and (vi) Cherifi, H., Mantegna, R.N., Rocha, L.M., Cherifi, C. and Miccichè, S. eds., 2023. *Complex Networks and Their Applications XI: Proceedings of The Eleventh International Conference on Complex Networks and Their Applications: COMPLEX NETWORKS 2022* Volumes 1 (Vol. 1077). Springer Nature. Focus issues: (i) co-Editor with János Kertész of the focus issue of the *New Journal of Physics* on “Focus on Statistical Physics Modeling in Economics and Finance” doi: 10.1088/1367-2630/13/2/025011 (2010), and (ii) co-Editor with di Iasio, G., Gallegati, M., and Lillo, F. Special issue of *Quantitative Finance on Interlinkages and Systemic Risk*. *Quantitative Finance*, 15(4), pp.587-724 2015.

The complete list of published articles can be accessed in the Web of Science database by searching for the author Mantegna RN or by accessing the dedicated web page of Google Scholar.

Ten most cited articles. Source Web of Science updated October 2022.

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2. R.N. Mantegna, Hierarchical structure in financial markets, *Eur. Phys. J. B* **11**, 193-197 (1999). **1218** citations.
3. R.N. Mantegna and H.E. Stanley, Stochastic Process With Ultra-Slow Convergence to a Gaussian: The Truncated Lévy Flight, *Physical Review Letters* **73**, 2946-2949 (1994). **623** citations.
4. M. Tumminello, T. Aste, T. Di Matteo, R.N. Mantegna, A tool for filtering information in complex systems, *Proc. Natl. Acad. Sci. USA* **102**, 10421-10426 (2005) **513** citations.
5. S.V. Buldyrev, A.L. Goldberger, S. Havlin, R.N. Mantegna, M.E. Matsuoka, C.-K. Peng, M. Simons and H.E. Stanley, Long-Range Correlation Properties of Coding and Noncoding DNA Sequences: GenBank analysis *Physical Review E* **51**, 5084-5091 (1995). **502** citations.
6. R.N. Mantegna, Fast, Accurate Algorithm for Numerical Simulation of Levy Stable Stochastic Processes, *Physical Review E* **49**, 4677-4683 (1994). **431** citations.
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10. G. Bonanno, G. Caldarelli, F. Lillo, S. Miccichè, N. Vandewalle, and R.N. Mantegna, Networks of equities in financial markets, *Eur. Phys. J. B* **38**, 363-371 (2004). **256** citations.

Dissemination

- Radio interview “Previsioni economiche: Fate il vostro gioco” of 27 May 2003 at the Italian radio program Radio 3 Scienza. Web site http://www.radio.rai.it/radio3/terzo_anello/scienza/
- Radio interview “L’Econochè?” on air on July 8th 2003 at the radio program “Il Volo delle Oche”. National broadcasted in Italy by Radio 24. Web site <http://www.radio24.ilsole24ore.com/oche/trasmissioni.html>
- Radio interview “Fai il broker? Allora l’intelligenza non è il tuo forte” on air October 27th 2003 in the Italian radio program Radio 3 Scienza. Web site http://www.radio.rai.it/radio3/terzo_anello/scienza/
- Video interview “Complexitat: Entrevista #6 Rosario Mantegna - November 26 2009” – Exposition: Cultures del canvi, Atoms socials i vides electròniques - Arts Santa Monica - Barcelona, Spain. <http://www.youtube.com/watch?v=GLx2sJyYJ2s>

- TEDx Lake Como 2010 - November 6 2010 – Aula Magna of the Politecnico di Milano, Como, Italy.
<http://www.youtube.com/watch?v=S-C9FMHGa0c>

Varia

- Biographical profile insert into the 6th and 7th Edition of Marquis's *Who's Who in Science and Engineering*.
- Biographical profile insert into the Marquis's *Who's Who in the World*, since 2004.