

# Matteo Marsili

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## CONTACT INFORMATION

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## PERSONAL INFORMATION

Born in Rome, 4th of January 1966. Italian citizen. Married, no children.

## RESEARCH INTERESTS

Statistical physics, non-equilibrium critical phenomena, disordered systems, probability theory and stochastic processes, complex networks. Interdisciplinary applications of statistical physics, including modeling socio-economic phenomena and financial markets, game theory, and biological networks.

## EDUCATION

Ph.D., *Dottorato* in Physics at SISSA, Trieste (1994)

- Subject: Non-equilibrium critical phenomena in disordered systems

M.Sc., *Laurea* in Physics, University of Rome "La Sapienza", Feb. 1990

- Subject: Multi-fractal properties of fractal growth processes (*Magna cum Laude*)

High school diploma at *Liceo Scientifico* "L. Pasteur" (1984).

## EMPLOYMENT RECORD

2002 - present Research scientist in the Condensed Matter and Statistical Physics sector of the Abdus Salam ICTP, Trieste (From June 2002).

1999 - 2002 Permanent position as researcher at Istituto Nazionale per la Fisica della Materia (INFN), SISSA, Trieste (From Jan. 1999).

1997 - 1999 Assistant professor in Statistical Physics at SISSA, Trieste, Italy (from Nov. 1997)

1997 - 1995 *Assistant Docteur* at the Institut de Physique Théorique, Université de Fribourg, Switzerland (from Nov. 1995).

1995 - 1994 Post doctoral research position in the Department of Theoretical Physics of the University of Manchester (from Nov. 1994).

## ACADEMIC ACTIVITIES

- Coordinator of the activities in Statistical Physics of the CMSP sector of the Abdus Salam ICTP (since 2007)
- Organization of conferences and workshops on socio-economic systems and finance, including:
  - Session on "Physics of Socio-Economic and Complex Systems" at the 22nd General Conference of the European Condensed Matter Division (EPS-CMD22) (Rome 27/08 - 1/09/2008).
  - Workshop "Complexity in Economics and Finance" (22-27 Oct 2007, Lorentz Center, Leiden NL)
  - Workshop "The Statistical Physics of Financial Markets" (ICTP Trieste, April 20-21 2007)

- Thematic Institute on "Networks, dynamics and socio-economics" and 7th Workshop on Economics with Heterogeneous Interacting Agents WEHIA 2002, (ICTP Trieste, 6 May - 1 June, 2002).
- "Application of Physics to Economic Modelling", NATO advanced research workshop (Prague, 8-10 Feb. 2001);
- Second School of Mathematical Economics (ICTP Trieste, 21 Aug.- 2 Sept. 2000).
- Organization of conferences and workshops in statistical physics and complex system science, including (in the past five years):
  - Conference on Knots and other Entanglements in Biopolymers: Topological and Geometrical Aspects of DNA, RNA and Protein Structures (ICTP Trieste, 15-19 Sept. 2008)
  - Perspectives in Nonlinear Dynamics (ICTP Trieste, 16 - 27 July , 2007)
  - Common Concepts in Statistical Physics and Computer Science (ICTP, Trieste, 2 - 6 July 2007)
  - Second Latin-American School and Conference on Statistical Physics and Interdisciplinary Applications (5 - 15 February 2007, Bento Gonçalves - Brazil).
  - Conference and School on Modelling Elastic Manifolds: from Soft Condensed Matter to Biomolecules (ICTP Trieste, 24 - 29 July 2006)
  - School and Conference on Statistical Physics and Interdisciplinary Applications (11 - 22 Sept. 2006, Beijing).
  - School and Workshop "Structure and Function of Complex Networks" (ICTP Trieste, 16-28 May 2005),
  - 1st Latin-American School and Conference: 'Statistical Physics and Interdisciplinary Applications' (La Havana, Cuba, 28 Feb. - 12 Mar. 2005).
  - Conference "Fundamental Aspects of Complexity" (ICTP Trieste , 6-10 Sept. 2004)
- Coordinator of the programme on [Environmental and Ecological Economics \(EEE\)](#), a joint project of Beijer Institute (Stockholm), Fondazione Eni E. Mattei (FEEM, Venice) and The Abdus Salam ICTP (2002-2006). Including the organization of more than 25 training and research events.
- Team coordinator for scientific projects:
  - EU-STREP project [GENetic NETworks: Emergence and Complexity \(FP6\)](#) (2006-2009).
  - EU NEST-STREP project [ComplexMarkets](#), (2005 - 2008).
  - Italian FISR project [High Frequency Dynamics in Financial Markets](#) (2004 - 2006).
  - EU RTN [STIPCO: Statistical physics of Information Processing and Combinatorial Optimisation \(HPRN-CT-2002-00319\)](#) (2002 - 2005).

EDITORIAL  
ACTIVITY

Member of the Editorial Board of

- [Journal of Statistical Mechanics: Theory and Experiment](#)
- [Physical Review E](#)
- [European Physical Journal B](#)
- [Journal of Economic Interaction and Coordination](#)

TEACHING

- Courses taught in the last five years:
  - [Diploma Programme in Basic Physics: Course in "Thermodynamics and Statistical Physics"](#) (2008, 2009)

- Diploma Programme in Condensed Matter Physics: Course in "Statistical Mechanics" (2006, 2007)
- SISSA PhD Program in Statistical Physics: Course in "Introduction to Probability Theory and Stochastic Processes" (2006 - 2008)
- SISSA PhD Program in Statistical Physics: Course in "Introduction to Probability Theory and Stochastic Processes" (2006 - 2008)
- ICTP/SISSA Joint Master's Degree Programme in Modeling and Simulation of Complex Realities: Courses in "Probability Theory and Stochastic Processes" and "Micro-economic modeling and Game Theory" (2001 - 2004).
- Troisième Cycle de la Physique en Suisse Romande: Course on Statistical Mechanics of Models of Financial Markets and beyond (22 April - 13 May 2004)
- Supervision of PhD students
  - Daniele De Martino, "Congestion phenomena in complex networks" SISSA Trieste (2007 - present)
  - Fabio Caccioli, "Systemic instability in models of random financial markets with many assets" SISSA Trieste (2007 - present)
  - Giacomo Raffaelli "Correlations instabilities in financial markets" (2001-2005) currently working on Investment and Trading Policies at Deloitte Consulting (Milan, Italy).
  - Andrea De Martino "Replica symmetry breaking in the minority game" SISSA Trieste (1998 - 2001). Currently researcher at CNR, University of Rome, "La Sapienza".
  - Lorenzo Giada "Data Clustering" SISSA Trieste (1998 - 2001). Currently working on Financial Modeling at Banca Italease.
  - Da Silva Luis Eduardo Araripe Gomes (Brazil, sandwich PhD student).
- Supervision of Master Students
  - Patrick Zoi, University of Trieste, Italy (2009 - present)
  - Emanuele Pugliese, Univ. of Rome "La Sapienza" (2008). Currently PhD student in Economics at Sant'Anna school, Pisa, Italy.
  - Andrea Veglio, University of Trieste, Italy (2006). Currently PhD at University of Torino, Italy.
  - Paolo Pin, Master on Modeling Complex Realities, ICTP. Currently assistant professor in Economics at University of Siena, Italy.
  - Mary J. Omero, Univ. of Fribourg (2007).

KEYNOTE AND  
INVITED TALKS

Keynote and invited talks in the last five years include:

- Interdisciplinary Workshop on Networks, May 31 - June 1, 2004, Univ. Pompeu Fabra, Barcelona Spain
- Statphys-Kolkata V: Complex Networks: Structure, Function and Processes 27 June - 1 July 2004
- Statphys 23, Bangalore, 4-9 July 2004
- Econophysics Workshop, September 27-29 2004, Oxford UK
- Volatility of financial markets: theoretical models, forecasting and trading. 18 - 29 Oct 2004, Lorentz Center, Univ. Leiden (NL)
- Interactions and Markets, 15-19 November 2004 Centro di Ricerca Matematica Ennio De Giorgi.
- Colloquium Lagrange, Torino 24 November 2004
- Econophysics Colloquium, 14-18 November 2005 Australian National University, Canberra, Australia
- Stochastic Game Theory, Erice, September 24-October 2, 2005
- Econophys-Kolkata II, Saha Institute of Nuclear Physics, Kolkata, 14-17 Feb. 2006.

- International Conference Applications of Physics in Financial Analysis (APFA5) Torino, June 29 - July 1, 2006.
- International workshop Extreme Events in Complex Dynamics (EXEV06) October 29 - November 03, 2006, MPIPKS Dresden (invited speaker)
- Complex Adaptive Systems and Interacting Agents, Oxford Sept. 28 - 29, 2006
- Social and Ecological Networks, Oxford 28-29 Sept. 2006
- Annual Meeting of German Condensed Matter Society, AKSOE section, Regensburg 26-30 March 2007
- Complexity, metastability and nonextensivity, Satellite of STATPHYS 23, Catania 1 - 5 July 2007.
- Statistical Physics of Social Dynamics: Opinions, Semiotic Dynamics, and Language, Erice, 14-19 July 2007
- Physics of Risk, Palermo, Italy, 21-23 Sep 2007
- Dynamics and Evolution of Biological and Social Networks, Palma de Mallorca, 18-20/2/2008
- Physics of distributed information systems (PhysDIS), 5-31 May 2008, Nordita, Stockholm, Sweden
- 5th European Conference on Complex Systems Jerusalem, September 14-19, 2008
- Dahlem Konferenz, "Is There a Mathematics of Social Entities?", December 14 to 19, 2008, Berlin
- "Ten years of CeNDEF", Jan. 6-7, 2009.
- Econophys-Kolkata IV, Saha Institute of Nuclear Physics, Kolkata, 9-13 Mar. 2009.
- Statistical mechanics of game theory, Mariehamn, Åland, May 27-30, 2009.

## BOOKS

- *Minority Games: Interacting Agents in Financial Markets*, D. Challet, M. Marsili, Y-C. Zhang Oxford University Press (2005).
- *The complex dynamics of economic interaction*, M. Gallegati, A. P. Kirman and M. Marsili Eds., Springer Lect. Notes in Economics and Math. Sciences Vol. 531 (2004).
- *Proceedings of the NATO Advanced Research Workshop: Application of physics in economic modelling*, Prague, February 8-10, 2002, Bouchaud, JP and Marsili, M and Roehner, BM and Slanina, F Eds., Physica A, Vol. 299 N. 1-2 (2001).

## PUBLICATIONS

From ISI database (May 13th 2009).

1. Matteo Marsili, Giacomo Raffaelli, and Benedicte Ponsot. Dynamic instability in a generic model of multi-assets markets. *Journal of Economic Dynamics & Control*, 33():11701181, 2009.
2. Carlotta Martelli, Andrea De Martino, Enzo Marinari, Matteo Marsili, and Isaac Perez Castillo. Identifying essential genes in Escherichia coli from a metabolic optimization principle. *Proc. Nat. Acad. Sci. USA*, 106(8):2607-2611, 2009.
3. Emanuele Pugliese, Claudio Castellano, Matteo Marsili, and Luciano Pietronero. Collaborate, compete and share. *Eur. Phys. J. B*, 67(3):319-327, 2009.
4. Daniele De Martino, Luca Dall'Asta, Ginestra Bianconi, and Matteo Marsili. Congestion phenomena on complex networks. *Phys. Rev. E*, 79(1, Part 2), 2009.
5. D. De Martino and M. Marsili. On the role of volatility in the evolution of social networks. *Eur. Phys. J. B*, 65(4):595-600, 2008.
6. L. Dall'Asta, C. Castellano, and M. Marsili. Statistical physics of the Schelling model of segregation. *JSTAT*, 2008.

7. F. Caccioli, S. Franz, and M. Marsili. Ising model with memory: coarsening and persistence properties. *JSTAT*, 2008.
8. D. Challet, A. De Martino, and M. Marsili. Dynamical instabilities in a simple minority game with discounting. *JSTAT*, 2008.
9. G. Bianconi, A. De Martino, F. F. Ferreira, and M. Marsili. Multi-asset minority games. *Quant. Finance*, 8(3):225–231, 2008.
10. L. Dall’Asta, M. Marsili, and P. Pin. Optimization in task-completion networks. *JSTAT*, 2008.
11. Andrea de Martino, Matteo Marsili, and Isaac Perez Castillo. Typical properties of large random economies with linear activities. *Macroecon. Dyn.*, 11(Suppl. 1):34–61, 2007.
12. A. Veglio and M. Marsili. Stochastic analysis of an agent-based model. *Physica A*, 385(2):631–636, 2007.
13. Christian Borghesi, Matteo Marsili, and Salvatore Micciche. Emergence of time-horizon invariant correlation structure in financial returns by subtraction of the market mode. *Phys. Rev. E*, 76(2, Part 2), 2007.
14. M. Marsili. Toy models and stylized realities. *Eur. Phys. J. B*, 55(2):169–173, 2007.
15. Ginestra Bianconi and Matteo Marsili. Number of cliques in random scale-free network ensembles. *Physica D*, 224(1-2):1–6, 2006.
16. M. Nekovee, Y. Moreno, G. Bianconi, and M. Marsili. Theory of rumour spreading in complex social networks. *Physica A*, 374(1):457–470, 2007.
17. Andrea De Martino and Matteo Marsili. Statistical mechanics of socio-economic systems with heterogeneous agents. *J. Phys. A*, 39(43):R465–R540, 2006.
18. Giacomo Raffaelli and Matteo Marsili. Dynamic instability in a phenomenological model of correlated assets. *JSTAT*, 2006.
19. George C. M. A. Ehrhardt, Matteo Marsili, and Fernando Vega-Redondo. Phenomenological models of socioeconomic network dynamics. *Phys. Rev. E*, 74(3, Part 2), 2006.
20. George Ehrhardt, Matteo Marsili, and Fernando Vega-Redondo. Diffusion and growth in an evolving network. *Int. J. Game Theory*, 34(3):383–397, 2006.
21. Tobias Galla, Michele Leone, Matteo Marsili, Mauro Sellitto, Martin Weigt, and Riccardo Zecchina. Statistical mechanics of combinatorial auctions. *Phys. Rev. Lett.*, 97(12), 2006.
22. Matteo Marsili and Giacomo Raffaelli. Risk bubbles and market instability. *Physica A*, 370(1):18–22, 2006.
23. Marc Bailly-Bechet, Antoine Danchin, Mudassar Iqbal, Matteo Marsili, and Massimo Vergassola. Codon usage domains over bacterial chromosomes. *Plos Comp. Biology*, 2(4):263–275, 2006.
24. Ginestra Bianconi and Matteo Marsili. Effect of degree correlations on the loop structure of scale-free networks. *Phys. Rev. E*, 73(6, Part 2), 2006.
25. G. Bianconi and M. Marsili. Emergence of large cliques in random scale-free networks. *Europhys. Lett.*, 74(4):740–746, 2006.

26. H Seyed-allaei, G Bianconi, and M Marsili. Scale-free networks with an exponent less than two. *Phys. Rev. E*, 73(4, Part 2), 2006.
27. F Vega-Redondo, M Marsili, and F Slanina. Clustering, cooperation, and search in social networks. *J. of the European Economic Association*, 3(2-3):628–638, 2005.
28. P Curty and M Marsili. Phase coexistence in a forecasting game. *JSTAT*, 2006.
29. D Challet, A De Martino, M Marsili, and IP Castillo. Minority games with finite score memory. *JSTAT*, 2006.
30. S Pigolotti, A Flammini, M Marsili, and A Maritan. Species lifetime distribution for simple models of ecologies. *Proc. Nat. Acad. Sci. USA*, 102(44):15747–15751, 2005.
31. A De Martino and M Marsili. Typical properties of optimal growth in the Von Neumann expanding model for large random economies. *JSTAT*, 2005.
32. G Raffaelli and M Marsili. Statistical mechanics model for the emergence of consensus. *Phys. Rev. E*, 72(1, Part 2), 2005.
33. G Bianconi and M Marsili. Loops of any size and Hamilton cycles in random scale-free networks. *JSTAT*, 2005.
34. GCMA Ehrhardt and M Marsili. Potts model on random trees. *JSTAT*, 2005.
35. A De Martino, M Marsili, and IP Castillo. Statistical mechanics analysis of the equilibria of linear economies. *JSTAT*, 2004.
36. G Bianconi, M Marsili, and F Vega-Redondo. On the non-trivial dynamics of complex networks. *Physica A*, 346(1-2):116–122, 2005.
37. FF Ferreira and M Marsili. Real payoffs and virtual trading in agent based market models. *Physica A*, 345(3-4):657–675, 2005.
38. G Bianconi and M Marsili. Clogging and self-organized criticality in complex networks. *Phys. Rev. E*, 70(3, Part 2), 2004.
39. A De Martino, I Giardina, A Tedeschi, and M Marsili. Generalized minority games with adaptive trend-followers and contrarians. *Phys. Rev. E*, 70(2, Part 2), 2004.
40. D Challet, M Marsili, and A De Martino. Stylized facts in minority games with memory: a new challenge. *Physica A*, 338(1-2):143–150, JUL 1 2004.
41. M Marsili, F Vega-Redondo, and F Slanina. The rise and fall of a networked society: A formal model. *Proc. Nat. Acad. Sci. USA*, 101(6):1439–1442, 2004.
42. A De Martino, M Marsili, and R Mulet. Adaptive drivers in a model of urban traffic. *Europhys. Lett.*, 65(2):283–289, 2004.
43. D Challet, M Marsili, and G Ottino. Shedding light on El Farol. *Physica A*, 332:469–482, 2004.
44. P Kozłowski and M Marsili. Statistical mechanics of the majority game. *J. Phys. A*, 36(47):11725–11737, 2003.
45. D Challet and M Marsili. Criticality and market efficiency in a simple realistic model of the stock market. *Phys. Rev. E*, 68(3, Part 2), 2003.

46. M Marsili. Scale invariance and criticality in financial markets. *Physica A*, 324(1-2):17–24, 2003.
47. L Giada and M Marsili. Algorithms of maximum likelihood data clustering with applications. *Physica A*, 315(3-4):650–664, 2002.
48. F Cecconi, M Marsili, JR Banavar, and A Maritan. Diffusion, peer pressure, and tailed distributions. *Phys. Rev. Lett.*, 89(8), 2002.
49. M Marsili and M Piai. Colored minority games. *Physica A*, 310(1-2):234–244, 2002.
50. M Marsili and D Challet. Continuum time limit and stationary states of the minority game. *Phys. Rev. E*, 64(5, Part 2), 2001.
51. M Marsili, R Mulet, F Ricci-Tersenghi, and R Zecchina. Learning to coordinate in a complex and nonstationary world. *Phys. Rev. Lett.*, 87(20), 2001.
52. M Marsili. Market mechanism and expectations in minority and majority games. *Physica A*, 299(1-2):93–103, 2001.
53. D Challet, M Marsili, and YC Zhang. Minority games and stylized facts. *Physica A*, 299(1-2):228–233, 2001.
54. L Giada and M Marsili. Data clustering and noise undressing of correlation matrices. *Phys. Rev. E*, 63(6, Part 1):art. no.–061101, 2001.
55. D Challet, M Marsili, and YC Zhang. Stylized facts of financial markets and market crashes in Minority Games. *Physica A*, 294(3-4):514–524, 2001.
56. A De Martino and M Marsili. Replica symmetry breaking in the minority game. *J. Phys. A*, 34(12):2525–2537, 2001.
57. D Challet, M Marsili, and R Zecchina. Comment on “Thermal model for adaptive competition in a market. *Phys. Rev. Lett.*, 85(23):5008, 2000.
58. L Giada and M Marsili. First-order phase transition in a nonequilibrium growth process. *Phys. Rev. E*, 62(5, Part A):6015–6020, 2000.
59. C Castellano, M Marsili, and A Vespignani. Nonequilibrium phase transition in a model for social influence. *Phys. Rev. Lett.*, 85(16):3536–3539, 2000.
60. D Challet and M Marsili. Relevance of memory in minority games. *Phys. Rev. E*, 62(2, Part A):1862–1868, 2000.
61. M Marsili, D Challet, and R Zecchina. Exact solution of a modified El Farol’s bar problem: Efficiency and the role of market impact. *Physica A*, 280(3-4):522–553, 2000.
62. D Challet, M Marsili, and R Zecchina. Statistical mechanics of systems with heterogeneous agents: Minority games. *Phys. Rev. Lett.*, 84(8):1824–1827, 2000.
63. D Challet, M Marsili, and YC Zhang. Modeling market mechanism with minority game. *Physica A*, 276(1-2):284–315, 2000.
64. D Challet and M Marsili. Phase transition and symmetry breaking in the minority game. *Phys. Rev. E*, 60(6, Part A):R6271–R6274, 1999.
65. MA Munoz, G Bianconi, C Castellano, A Gabrielli, M Marsili, and L Pietronero. Non-perturbative renormalization group approach to surface growth. *Comp. Phys. Communications*, 121(Sp. Iss. SI):358–362, 1999.

66. M Marsili. On the multinomial logit model. *Physica A*, 269(1):9–15, 1999.
67. R Cafiero, A Gabrielli, M Marsili, MA Munoz, and L Pietronero. Generalized dielectric breakdown model. *Phys. Rev. E*, 60(2):786–790, 1999.
68. C Castellano, M Marsili, MA Munoz, and L Pietronero. Scale invariant dynamics of surface growth. *Phys. Rev. E*, 59(6):6460–6475, 1999.
69. S Maslov, P De los Rios, M Marsili, and YC Zhang. Critical exponents of the anisotropic Bak-Sneppen model. *Phys. Rev. E*, 58(6, Part A):7141–7145, 1998.
70. C Castellano, A Gabrielli, M Marsili, MA Munoz, and L Pietronero. High dimensional behavior of the Kardar-Parisi-Zhang growth dynamics. *Phys. Rev. E*, 58(5, Part A):R5209–R5212, 1998.
71. L Pietronero and M Marsili. The scale invariant dynamics. *J. de Physique IV*, 8(P6):57–62, 1998.
72. M Marsili and A Valleriani. Self organization of interacting polya urns. *Eur. Phys. J. B*, 3(4):417–420, 1998.
73. M Marsili, S Maslov, and YC Zhang. Dynamical optimization theory of a diversified portfolio. *Physica A*, 253(1-4):403–418, 1998.
74. P De Los Rios, M Marsili, and M Vendruscolo. High-dimensional Bak-Sneppen model. *Phys. Rev. Lett.*, 80(26):5746–5749, 1998.
75. R Cafiero, L Pietronero, A Gabrielli, and M Marsili. Theory of extremal dynamics with quenched disorder: Self-organization, avalanche dynamics and critical exponents. *Int. J. Mod. Phys. B*, 12(12-13):1263–1275, 1998.
76. M Marsili, S Maslov, and YC Zhang. Comment on “Role of intermittency in urban development: A model of large-scale city formation”. *Phys. Rev. Lett.*, 80(21):4830, 1998.
77. C Castellano, M Marsili, and L Pietronero. Nonperturbative renormalization of the Kardar-Parisi-Zhang growth dynamics. *Phys. Rev. Lett.*, 80(16):3527–3530, 1998.
78. M Marsili and YC Zhang. Overhangs in interface growth and ground-state paths. *Phys. Rev. E*, 57(4):4814–4816, 1998.
79. M Marsili and YC Zhang. Interacting individuals leading to Zipf’s law. *Phys. Rev. Lett.*, 80(12):2741–2744, 1998.
80. M Marsili, P De los Rios, and S Maslov. Expansion around the mean-field solution of the Bak-Sneppen model. *Phys. Rev. Lett.*, 80(7):1457–1460, 1998.
81. MJ Omero, M Dzierzawa, M Marsili, and YC Zhang. Scaling behavior in the stable marriage problem. *J. de Physique I*, 7(12):1723–1732, 1997.
82. G Caldarelli, M Marsili, and YC Zhang. A prototype model of stock exchange. *Europhys. Lett.*, 40(5):479–484, 1997.
83. S Galluccio, G Caldarelli, M Marsili, and YC Zhang. Scaling in currency exchange. *Physica A*, 245(3-4):423–436, 1997.
84. M Marsili and YC Zhang. Fluctuations around Nash equilibria in game theory. *Physica A*, 245(1-2):181–188, 1997.



85. R Cafiero, A Gabrielli, M Marsili, L Pietronero, and L Torosantucci. Laplacian fractal growth in media with quenched disorder. *Phys. Rev. Lett.*, 79(8):1503–1506, 1997.
86. R Cafiero, A Gabrielli, and M Marsili. Irrelevance of spatial correlations in models with extremal dynamics. *Phys. Rev. E*, 55(6, Part B):7745–7748, 1997.
87. A Gabrielli, R Cafiero, M Marsili, and L Pietronero. Theory of self-organized criticality for problems with extremal dynamics. *Europhys. Lett.*, 38(7):491–496, 1997.
88. M Marsili and M Vendruscolo. Growth with memory. *Europhys. Lett.*, 37(8):505–509, 1997.
89. M Marsili, A Maritan, F Toigo, and JR Banavar. Stochastic growth equations and reparametrization invariance. *Rev. Mod. Phys.*, 68(4):963–983, 1996.
90. M Marsili and YC Zhang. Probabilistic fragmentation and effective power law. *Phys. Rev. Lett.*, 77(17):3577–3580, 1996.
91. M Marsili. Directed polymers with killing. *J. Phys. A*, 29(17):5405–5419, 1996.
92. M Vendruscolo and M Marsili. Diffusion in disordered media as a process with memory. *Phys. Rev. E*, 54(2):R1021–R1024, 1996.
93. R Cafiero, A Gabrielli, M Marsili, and L Pietronero. Theory of extremal dynamics with quenched disorder: Invasion percolation and related models. *Phys. Rev. E*, 54(2):1406–1425, 1996.
94. R Cafiero, A Gabrielli, M Marsili, and L Pietronero. Mapping of a deterministic dynamics with quenched variables into a stochastic problem with cognitive memory. *Fractals*, 3(3):471–481, 1995.
95. M Marsili, A Maritan, F Toigo, and JR Banavar. Renormalization group study of growth processes with an oblique incident flux of atoms. *Europhys. Lett.*, 35(3):171–176, 1996.
96. A Gabrielli, M Marsili, R Cafiero, and L Pietronero. Comment on the run time statistics in models of growth in disordered media. *J. Stat. Phys.*, 84(3-4):889–893, 1996.
97. M Marsili and AJ Bray. Soluble infinite-range model of kinetic roughening. *Phys. Rev. Lett.*, 76(15):2750–2753, 1996.
98. M Marsili, G Caldarelli, and M Vendruscolo. Quenched disorder, memory, and self-organization. *Phys. Rev. E*, 53(1, Part A):R13–R16, 1996.
99. MA Moore, T Blum, JP Doherty, and M Marsili. Glassy solutions of the Kardar-Parisi-Zhang equation. *Phys. Rev. Lett.*, 74(21):4257–4260, 1995.
100. M Marsili. Renormalization-Group approach to the self-organization of a simple model of biological evolution. *Europhys. Lett.*, 28(6):385–390, 1994.
101. M Marsili. Run-Time Statistics in models of growth in disordered media. *J. Stat. Phys.*, 77(3-4):733–754, 1994.
102. M Marsili. Pair description of the Fractional Quantum Hall Effect with application to edge waves. *Phys Rev. B*, 48(24):18051–18059, 1993.
103. M Marsili. Mean-field analysis of the equilibrium patterns growing in a Laplacian field. *J. Phys. A*, 25(12):3493–3506, 1992.

104. R Deangelis, M Marsili, L Pietronero, A Vespignani, and HJ Wiesmann. Universality of growth rules in fractal growth. *Europhys. Lett.*, 16(5):417–422, 1991.
105. M Marsili and E Caglioti. The Smoothed Laplacian Model - a mean field approximation to Laplacian growth. *Physica A*, 176(3):463–484, 1991.
106. M Marsili and L Pietronero. Properties of the growth probability for the Dielectric-Breakdown model in cylinder geometry. *Physica A*, 175(1):9–30, 1991.
107. M Marsili and L Pietronero. Fixed Scale Transformation approach to the multifractal properties of the growth probabilities in the Dielectric-Breakdown model. *Physica A*, 175(1):31–46, 1991.