

Curriculum Vitae

JOSÉ FERNANDO FERREIRA MENDES

Institution address:

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Pátio do Marquês, 7 - 4Dto
3880-140 Ovar, Portugal
Tel. +351 256 582 618

Date and place of birth:

June 22, 1962, in Porto - Portugal

Nationality:

Portuguese

Sex: Male

Marital Status:

Married, one children

Education:

2002 Habilitation, with highest distinction, University of Porto
1995 Ph.D in Physics, with highest distinction, University of Porto
1990 Masters degree, University of Porto
1987 “Licenciatura” in Physics, University of Porto

Employment history:

April, 2002 - Present: Associate Professor w/ habilitation, University of Aveiro
February, 1995 - April 2002: Assistant Professor, University of Porto
January, 1997 - February, 1997: Invited Professor, University H. Poincaré
October, 1990 - February, 1995: Assistant, University of Porto
October, 1987 - October 1990: Junior Assistant, University of Porto

Sabbatical positions and other visits:

Visiting Professor, Boston University, 1995-96

Oxford University, 1993-94

CUNY, New York, 1994

S. Paulo University, Brazil, 1993

Geneva University, 1991

Membership of professional societies:

Portuguese Physical Society
New York Academy of Sciences

Served as Reviewer:

Nature, Science, Phys. Rev. Lett., PNAS, Europhys. Lett., J. Phys. A, Phys. Rev. E, Comp. Networks and ISDN Syst. Journ., Phys. Lett. A

Consulting:

Nature News Service (Dr. Mark Haw)

Main research activities:

Nonequilibrium statistical physics of evolving networks and other nonequilibrium problems (models of spreading diseases, SOC). Surface growth and transport processes, epitaxial growth. Competition of dynamics. Granular media. Models with applications to Biology and Ecology. Models of Evolving Networks.

Conferences Organized:

Workshop on Nonequilibrium Dynamics Systems, Porto, 7-11 June, 1999
<http://www.fc.up.pt/fis/jfmendes/ws99/ws.html>
I Mini-Workshop on Physics Biology, 19 September 2003, Aveiro, Portugal
II Mini-Workshop on Physics Biology, 17 October 2003, Aveiro, Portugal

Academic Prizes and Fellowships:

INIC, 1998-1990

Calouste Gulbenkian Foundation, 1991

Gomes Teixeira Foundation, 1991

INIC/JNICT (Portuguese Government), 1991-94

PRAXIS XXI (Portuguese Government), 1996

Luso-American Foundation for Development (FLAD), 1995

Nominated to the Ioffe Prize (Russian Academy of Science), 2003

Computer experience:

Workstations:

SGI Power Indigo, IBM RS/6000, DEC - Alpha, Sun Ultra 30, HP-720, CDC Cyber

Operating systems:

Unix, Linux, Windows, Vax, Mac OS

Languages:

Fortran, C, Basic, HTML, Visual Basic, Mathematica

Other:

Latex, Tex, XMGrace, Xfig, Xmgr, Emacs, Vi, Origin, Kaleida-Graph, Gimp

Citations:

About 500 citations as of October, 2003

Grants Awarded:

Euros 85,000 for Granular media and self-organized criticality, from FCT
Euros 20,000 for Structure and evolution of random networks, from FCT
Euros 10,000 for Random networks, from NATO (PST.CLG.979688)

Publications:

Books:

RANDOM NETWORKS: From Biological nets to the Internet and WWW
S.N. Dorogovtsev e J.F.F. Mendes
Oxford University Press (February 2003)

Book chapters:

Accelerated growth of networks
S.N. Dorogovtsev e J.F.F. Mendes
Handbook of Graphs and Networks: From the Genome to the Internet, S.
Bornholdt and H.G. Scuster (eds.). Wiley-VCH, 318-341 (2002)

Effect of acceleration on the structure of networks
J.F.F. Mendes
Proceedings of the XVIII Sitges Conference on Statistical mechanics of
complex networks, Sitges, 10-14 Junho 2002, Springer-Verlag (2003)

Random networks: their application to communications networks

J.F.F. Mendes

Web Dynamics, Springer-Verlag (2003)

Journal articles:

- 1- DYNAMICS OF THE INFINITE RANGED POTTS MODEL, J.F.F. Mendes and E.J.S. Lage, *J. Stat. Phys.* 64, 653 (1991)
- 2- NUMERICAL SIMULATION OF GLAUBER DYNAMICS IN THE 1D BEG MODEL, J.F.F. Mendes and E.J.S. Lage, *Phys. Lett. A* 15, 13 (1991)
- 3- NON-UNIVERSAL CRITICAL BEHAVIOUR IN THE 1D BEG MODEL WITH KAWASAKI DYNAMICS, J.F.F. Mendes, S. Cornell, M. Droz and E.J.S. Lage, *J. Phys. A* 25, 73 (1992)
- 4- COMPETING DYNAMICS IN THE 1D BEG MODEL: HYDRODYNAMIC EQUATIONS, J.F.F. Mendes and E.J.S. Lage, *Phys. Rev. E* 48, 1738 (1993)
- 5- NON-EQUILIBRIUM STATIONARY STATES IN THE 1D BEG MODEL: FIRST- AND SECOND-ORDER PHASE TRANSITIONS, J.F.F. Mendes and E.J.S. Lage, *J. Phys. A* 26, 3853 (1993)
- 6- NON-EQUILIBRIUM SPIN MODELS WITH ISING UNIVERSAL BEHAVIOUR, M.J. Oliveira, J.F.F. Mendes and M.A. Santos, *J. Phys. A* 26, 2317 (1993)
- 7- GENERALIZED SCALING FOR MODELS WITH MULTIPLE ABSORBING STATES, J.F.F. Mendes, R. Dickman, M. Henkel e M.C. Marques, *J. Phys. A* 27, 3019 (1994)
- 8- EXACT SOLUTION OF THE DISSOCIATIVE "HOT DIMERS" WITH REACTION IN ONE DIMENSION, J.F.F. Mendes and R.B. Stinchcombe, *Europhys. Lett.* 27, 227 (1994)
- 9- CROSSOVER FROM DIRECTED PERCOLATION TO COMPACT PERCOLATION, J.F.F. Mendes, H. Herrmann and R. Dickman, *Phys. Rev. E* 54, R3071 (1996)
- 10- SHORT TIME DYNAMICS OF A TWO DIMENSIONAL MAJORITY VOTE MODEL, J.F.F. Mendes and M.A. Santos, *Phys. Rev. E* 57, 108 (1998)
- 11- LOGARITHMIC CLUSTERING IN SUBMONOLAYER EPITAXIAL GROWTH, P.L. Krapivsky, J.F.F. Mendes and S. Redner, *Euro. Phys. Jour. B* 4, 401 (1998)
- 12- THE RELAXATION OF INITIAL CONDITION IN SYSTEMS WITH INFINITELY MANY ABSORBING STATES, G. Odor, J.F.F. Mendes, M.A. Santos and M.C. Marques, *Phys. Rev. E* 58, 7020 (1998)
- 13- INFLUENCE OF CLUSTER DIFFUSION ON EPITAXIAL GROWTH, P.L. Krapivsky P, J.F.F. Mendes e S. Redner, *Phys. Rev. B* 59, 15950 (1999)
- 14- A PARITY CONSERVING DIMER MODEL WITH INFINITELY MANY ABSORBING STATES, M.C. Marques and J.F.F. Mendes, *Euro. Phys. Jour. B* 12, 123 (1999)
- 15- VORTEX DYNAMICS IN A THREE-STATE MODEL UNDER CYCLIC DOMINANCE, G Szabo, M.A. Santos, and J.F.F. Mendes, *Phys. Rev. E* 60, 3776 (1999)
- 16- HOW SANDPILES SPILL: SANDPILE PROBLEM IN A THICK FLOW REGIME, S.N. Dorogovtsev and J.F.F. Mendes, *Phys. Rev. Lett.* 83, 2946 (1999)
- 17- EXACTLY SOLVABLE SMALL-WORLD NETWORK, S.N. Dorogovtsev e J.F.F. Mendes, *Europhys. Lett.* 50, 1 (2000)

- 18- EVOLUTION OF A SANDPILE IN A THICK FLOW REGIME, S.N. Dorogovtsev e J.F.F. Mendes, Phys. Rev. E 61, 2909 (2000)
- 19- CRITICAL BEHAVIOUR OF MODELS WITH INFINITELY MANY ABSORBING STATES, J.F.F. Mendes, Braz. J. Phys. 30, 105 (2000)
- 20- EVOLUTION OF NETWORKS WITH AGING OF SITES, S.N. Dorogovtsev e J.F.F. Mendes, Phys. Rev. E 62, 1842 (2000)
- 21- STRUCTURE OF GROWING NETWORKS WITH PREFERENTIAL LINKING, S.N. Dorogovtsev, J.F.F. Mendes and A.N. Samukhin, Phys. Rev. Lett. 85, 4633 (2000)
- 22- SCALING BEHAVIOUR OF DEVELOPING AND DECAYING NETWORKS, S.N. Dorogovtsev and J.F.F. Mendes, Europhys. Lett. 52, 33 (2000)
- 23- BAK-SNEPPEN MODEL NEAR ZERO DIMENSION, S.N. Dorogovtsev, J.F.F. Mendes and Y. Pogorelov, Phys. Rev. E 62, 295 (2000)
- 24- EFFECT OF ACCELERATING GROWTH OF COMMUNICATIONS NETWORKS ON THEIR STRUCTURE, S.N. Dorogovtsev and J.F.F. Mendes, Phys. Rev. E 63, R 025101 (2001)
- 25- ANOMALOUS BEHAVIOR OF CONTACT PROCESS WITH AGING, S.N. Dorogovtsev and J.F.F. Mendes, Phys. Rev. E 63, 046107 (2001)
- 26- TIME EVOLUTION OF AVALANCHES ON A ROTATING HALF FILLED DRUM, S.N. Dorogovtsev and J.F.F. Mendes, Euro. Phys. J. E5, 441 (2001)
- 27- SIZE-DEPENDENT DEGREE DISTRIBUTION OF A SCALE FREE GROWING NETWORK, S.N. Dorogovtsev, J.F.F. Mendes and A.N. Samukhin, Phys. Rev. E 63, 062101 (2001)
- 28- SCALING PROPERTIES OF SCALE-FREE EVOLVING NETWORKS: CONTINUOUS APPROACH, S.N. Dorogovtsev and J.F.F. Mendes, Phys. Rev. E 63, 056125 (2001)
- 29- GIANT STRONGLY CONNECTED COMPONENT OF DIRECTED NETWORKS, S.N. Dorogovtsev, J.F.F. Mendes and A.N. Samukhin, Phys. Rev. E, R025101 (2001)
- 30- LANGUAGE AS AN EVOLVING WORD WEB, S.N. Dorogovtsev and J.F.F. Mendes, Proc. Royal Soc. London B 268, 2606 (2002)
- 31- COMMENT "BREACKDOWN OF THE INTERNET UNDER INTENTIONAL ATTACK", by R. Cohen, ..., S. Havlin (Phys. Rev. Lett. 83, 3682 (2001)), S.N. Dorogovtsev e J.F.F. Mendes, Phys. Rev. Lett. 87, 219801 (2001)
- 32- EVOLUTION OF NETWORKS, S.N. Dorogovtsev e J.F.F. Mendes, Advances in Physics 51, 1079 (2002), Review article (109 pages)
- 33- ANOMALOUS PERCOLATING PROPERTIES OF GROWING SCALE-FREE NETWORKS, S.N. Dorogovtsev, J.F.F. Mendes e A.N. Samukhin, Phys. Rev. E 64, 066110 (2001)
- 34- STATIC CRITICAL BEHAVIOR IN THE INACTIVE PHASE OF THE PAIR CONTACT PROCESS, M. C. Marques, M.A. Santos e J.F.F. Mendes, Phys. Rev. E 65, 016111 (2002)
- 35- MULTIFRACTAL PROPERTIES OF GROWING NETWORKS, S.N. Dorogovtsev, J.F.F. Mendes and A.N. Samukhin, EuroPhys. Lett. 57, 334 (2002)
- 36- A LINGUAGEM COMO UMA REDE DE PALAVRAS EM EVOLUCAO, S.N. Dorogovtsev and J.F.F. Mendes, Revista de Comunicacao e Linguagem, (2002)

- 37- MONTE CARLO STUDY OF THE ELASTIC INTERACTION IN HETEROEPITAXIAL GROWTH, B.M.T. Goncalves and J.F.F. Mendes, Phys. Rev. E 65, 061602 (2002)
- 38- STATISTICS OF A SCALE-FREE PSEUDOFRACTAL, S.N. Dorogovtsev, A.V. Goltsev and J.F.F. Mendes, Phys. Rev. E (2002)
- 39- ISING MODEL ON NETWORKS WITH AN ARBITRARY DISTRIBUTION OF CONNECTIONS, S.N. Dorogovtsev, A.V. Goltsev and J.F.F. Mendes, Phys. Rev. E (2002)
- 40- WWW AND INTERNET MODELS FROM 1955 TILL OUR DAYS AND THE "POPULARITY IS ATTRACTIVE" PRINCIPLE, S.N. Dorogovtsev, J.F.F. Mendes and A.N. Samukhin, Cond-mat/0009090, Comment ao artigo: World-Wide Web scaling exponent from Simon s 1955 models, Phys.Rev. E 64, 035104 (2001)
- 41- HIERARCHICAL SOCIAL NETWORKS AND INFORMATION FLOW, Luis Lopez, J.F.F. Mendes, and Miguel A.F. Sanjuan, Physica A 316, 591 (2002)
- 42- PRINCIPLES OF THE STATISTICAL MECHANICS OF EVOLVING NETWORKS, S.N. Dorogovtsev, J.F.F. Mendes and A.N. Samukhin, Nucl.Phys. B666 (2003) 396-416
- 43- FIRST ORDER PHASE TRANSITION IN THE POTTS MODEL ON NETWORKS WITH AN ARBITRARY DISTRIBUTION OF CONNECTIONS, S.N. Dorogovtsev, A.V. Goltsev and J.F.F. Mendes, to be submitted
- 44- CRITICAL PHENOMENA IN NETWORKS, A.V. Goltsev, S.N. Dorogovtsev, and J.F.F. Mendes, Phys. Rev. E (accepted).
- 45- HOW TO GENERATE A RANDOM GROWING NETWORK, S.N. Dorogovtsev, J.F.F. Mendes, and A.N. Samukhin, cond-mat/0206132
- 46- HOW TO CONSTRUCT A CORRELATED NET, S.N. Dorogovtsev, J.F.F. Mendes, e A.N. Samukhin, cond-mat/0206133
- 47- SPECTRA OF COMPLEX NETWORKS, S.N. Dorogovtsev, A.V. Goltsev, J.F.F. Mendes, and A.N. Samukhin, accepted in PRE
- 48- Metric structure of random networks, S.N. Dorogovtsev, J.F.F. Mendes, and A.N. Samukhin, Nucl. Phys. B 653, 307 (2003)
- 49- Roughness of sandpile surfaces, J.G. Oliveira, J.F.F. Mendes, and G. Tripathy, Accepted in PRE
- 50- POTTS MODEL ON COMPLEX NETWORKS, S.N. Dorogovtsev, A.V. Goltsev, and J.F.F. Mendes, accepted in EPJB

Proceedings:

- 1- S.N. Dorogovtsev, J.F.F. Mendes HOW SANDPILES SPILL: SANDPILE PROBLEM IN A THICK FLOW REGIME. Workshop Nonequilibrium Dynamic Systems, Porto, 7-11 June, 1999, p.12
- 2- S.N. Dorogovtsev, J.F.F. Mendes HOW SANDPILES SPILL: SANDPILE PROBLEM IN A THICK FLOW REGIME. Workshop Nonequilibrium Dynamic Systems, Porto. 7-11 June. 1999, p.12
- 3- S.N. Dorogovtsev, J.F.F. Mendes CONDENSATION OF LINKS IN INHOMOGENEOUS GROWING NETWORKS. MECO26 conference, Prague, 8-10 March, 2001, p. O11
- 4- S.N. Dorogovtsev, J.F.F. Mendes, e A.N. Samukhin MULTIFRACTALITY OF VERTEX DEGREE DISTRIBUTIONS OF GROWING NETWORKS. MECO26 conference, Prague, 8-10 March, 2001, p. P13

- 5- S.N. Dorogovtsev, J.F.F. Mendes ACCELERATING GROWTH OF NETWORKS. International Conference on Dynamical Networks in Complex Systems, Kiel, 25-27 July 2001, p.35
- 6- S.N. Dorogovtsev, J.F.F. Mendes, e A.N. Samukhin GIANT CONNECTED COMPONENTS OF DIRECTED NETWORKS. International Conference on Dynamical Networks in Complex Systems, Kiel, 25-27 July 2001, p.56
- 7- S.N. Dorogovtsev, J.F.F. Mendes CONDENSATION OF EDGES IN INHOMOGENEOUS GROWING NETWORKS. International Conference on Dynamical Networks In Complex Systems, Kiel, 25-27 July 2001, p.57
- 8- S.N. Dorogovtsev, J.F.F. Mendes EFFECT OF ACCELERATION ON THE STRUCTURE OF NETWORKS, XVIII Sitges Conference on Statistical mechanics of complex networks, Sitges, 10-14 Junho 2002, Springer-Verlag.

Contributed talks (with *) and posters:

10th General Conference of the Condensed Matter Division of the European Physical Society (Lisboa, 9 - 12 de April 1990) Dynamics in the mean-field Potts Model. * Workshop: Dynamics of equilibrium and far from equilibrium systems, (Vila Nova de Cerveira, 25 - 27 de June 1990) Dynamics of the mean field Potts model.

8th General Conference of the European Physical Society - Trends in Physics (Amsterdao, 4 - 8 de September, 1990) Dynamics in the mean-field Potts Model.

STATPHYS-18, 18th IUPAP International Conference in Statistical Physics (Berlin, 2 - 8 de August 1992) One dimensional Ising Model with competing Glauber and Kawasaki dynamics.

STATPHYS-18, 18th IUPAP International Conference in Statistical Physics (Berlin, 2 - 8 de August 1992) Stationary states in the 1-d BEG model with competing spin-flip and spin exchanges.

NATO ASI (13 - 23 April 1993) Geilo, Norway Competing dynamics in the 1d BEG model: Hydrodynamic limit and Monte Carlo results.

* Workshop on Nonequilibrium Systems, em Budapeste, Hungria, 10 - 15 September 1997, Dynamics in an adaptive voter model.

STATPHYS-20, 18th IUPAP International Conference in Statistical Physics (Paris, 20 - 25 July 1998), Influence of cluster diffusion on epitaxial growth.

STATPHYS-20, 18th IUPAP International Conference in Statistical Physics (Paris, 20 - 25 July 1998), The relaxation of initial condition in systems with infinitely many absorbing states.

STATPHYS-20, 18th IUPAP International Conference in Statistical Physics (Paris, 20 - 25 July 1998), Critical behaviour of a parity conserving dimer model with multiple absorbing states.

* Comemorações dos 25 anos da Sociedade Portuguesa de Fisica (SPF), um dos 6 convidados, 25 - 26 de September, 1999 Graos de compreensao

* Workshop, Praga, 7-11 de March 2001, Condensation states in inhomogeneous growing networks

Workshop, Praga, 7-11 de March 2001, Multifractality of vertex degree distributions of growing networks

Recent Invited Talks:

2001

International conference on Nonequilibrium Systems, Kas, Turquia, 24 September, 5 October 2001. Statistical Mechanics of Growing Networks (3 h course)

Conferencia Internacional sobre redes (CECL), Fundacao Calouste Gulbenkian 29-31 October 2001. A Linguagem como uma rede de palavras em evolucao

International conference on Discrete Random Geometries and Quantum Gravity, Instituto Spinoza, Utrecht, Holanda, 18-20 de October 2001. Geometric properties of evolving networks

2002

XVIII Sitges Conference on Statistical mechanics of complex networks, Sitges, Espanha, 10-14 June 2002 Effects of acceleration in the structure of networks

Conference on Scaling and phase transitions in complex networks and nonequilibrium systems, Pohang, Korea, 18-21 de February 2002

Invited to participate in "Complex Systems Network of Excellence" (EXYSTENCE), ICTP-Trieste.

2003

International conference on Nonequilibrium statistical physics of in low dimensions and reaction diffusion systems, Dresden, Alemanha, 21 of September to 10 October 2003.

23th Center for Nonlinear Studies anual Conference, Networks: Structure, Dynamics and Function May 12 - 16, 2003, Santa Fe, New Mexico, USA

ThinkCreative, Small-World and Organizational Forms, Bruxels, 3-4 June 2003

Arrabida Meeting, Arrabida, 14-16 June 2003, Portugal

Oeiras Mathematical and Computational Biology Workshop, Institute Gulbenkian of Science, June 20, 2003, Portugal

Workshop on Synchronization and Complex Dynamics in Networks with Applications to Ecology, June 17- 19, Potsdam, Germany (2 talks)

Workshop on Networks, August 28-30, Budapest, Hungary

International Conference in Networks (COSIN-FET), September 1-5, 2003, Rome, Italy

Fontier of Science 2003, Pavia, September 8-12, 2003, Italy

Complex Agent-based Dynamics Networks, October 6-7, Oxford, UK

2004

Satelite StatPhys Conf., Kolkata, June 27-30

StatPhys 22, Bangalore, July 1-5

Satelite StatPhys, Seoul, Korea, June 29 - July 2

International Workshop on Self*-Properties, Bologna, Italy, May 31-June 2

Workshop on Simple Models of Complex Networks, January (19th-23rd), Leeds, UK

3th Conference Iberoamericana in Systems, Cibernetics and Informatics,
Orlando, Florida, US, July 21-25

Fernando