Curriculum Vitae

INFORMAZIONI PERSONALI

Nome SALVATORE
Cognome MICCICHE'
Recapiti Dipartimento di Fisica e Chimica, Viale delle Scienze, Ed. 18, 90128 Palermo, stanza 128

E-mail salvatore.micciche@unipa.it

FORMAZIONE TITOLI

PREVIOUS POSITIONS

1 May 2003 Researcher (Ricercatore INFM III liv. - 3 years)

2 January 2005 National Institute for the Physics of Matter - Research Unit of Palermo, Palermo (I)

FIRB Project: *Cellular Self-Organizing nets and chaotic nonlinear dynamics to model and control complex system*

Scientific Tutor: Prof. R. N. Mantegna

1 January 2002 Post-doc (Assegnista di Ricerca)

30 April 2003 University of Palermo, Department of Physics and Related Technologies, Palermo (I)

Project: *Study of Stochastic Processes with Long-Range Correlations*

Scientific Tutor: Prof. R. N. Mantegna

1 October 2001 Collaboration (Collaborazione Occasionale)

31 December 2001 National Institute for the Physics of Matter - Research Unit of Palermo, Palermo (I)

Project: *Study of Stochastic Processes with Long-Range Correlations*

Scientific Tutor: Prof. R. N. Mantegna

1 July 2000 Post-doc (Assegnista di Ricerca)

30 June 2001 National Institute for the Physics of Matter - Research Unit of Palermo, Palermo (I)

Project: *Volatility in Financial Markets*

Scientific Tutor: Prof. R. N. Mantegna

EDUCATION

21 December 1999 Ph.D. in General Relativity

Loughborough University, Department of Mathematical Sciences, Loughborough (UK)

Project: *Physical Properties of Gravitational Solitons*

Supervisor: Prof. J. B. Griffiths

Such title has been recognized by the italian Ministry of Education as equivalent to the italian **Dottore di Ricerca** (13/06/2000)

16 March 1995 Degree in Physics

University of Pisa, Department of Physics, Pisa (I)

Project: *Gauge Invariant Charged Fields in Quantum Electrodynamics*

Supervisor: Dr. E. D'Emilio

ATTIVITA' DIDATTICA

INSTITUTIONAL TEACHING ACTIVITY

My institutional teching activity within the university of Palermo, as recorded in the *Register of the Teaching Activities* deposited in the administrative offices of the *Faculty of Medicine and Surgery*, has been:

ademic Year 2011/2012 394 hours

ademic Year 2010/2011 419 hours

ademic Year 2009/2010 428 hours

ademic Year 2008/2009 402 hours

ademic Year 2007/2008 482 hours

ademic Year 2006/2007 495 hours

ademic Year 2005/2006 471 hours

ademic Year 2004/2005 291 hours

ademic Year Lecturer

m 2009/2010 University of Palermo, Faculty of Medicine and Surgery

2012/2013 2nd level degree in "*Medicina e Chirurgia - CHIRONE*"

Course: Physics – 60 hours

ademic Year Lecturer

m 2006/2007 University of Palermo, Faculty of Medicine and Surgery

2009/2010 2nd level degree in "Medicina e Chirurgia"

Course: Physics– 60 hours

ademic Year Lecturer

m 2011/2012 University of Palermo, Faculty of Medicine and Surgery

2012/2013 Optional Course (cod. 14811) “Statistical Physics in Biological Systems” – 24 hours

ademic Year Lecturer

m 2006/2007 University of Palermo, Faculty of Medicine and Surgery

2011/2013 Specialization School in Medical Physics

Course: “Statistical Physics in Biological Systems” – 24 hours

ademic Year Lecturer

m 2006/2007 University of Palermo, Faculty of Medicine and Surgery

2009/2010 Specialization School in Medical Physics

Course: Bioinformatics

ademic Year Lecturer

07/2008 University of Palermo, Department of Physics and Related Technologies

06/2007 PhD School in Applied Physics

Course: Bioinformatics

ademic Year Lecturer

09/2010 University of Palermo, Faculty of Medicine and Surgery

1st level degree in "*Ostetricia*"

Course: Physics (I semestre)

ademic Year Lecturer

05/2006 University of Palermo, Faculty of Medicine and Surgery

1st level degree in "*Igiene Dentale*"

Course: Physics (I semestre)

ademic Year Lecturer

05/2006 University of Palermo, Faculty of Medicine and Surgery

1st level degree in "*Igiene Dentale*"

Course: Applied Physics (II semester)

ademic Year Lecturer

05/2006 University of Palermo, Faculty of Medicine and Surgery

1st level degree in "*Ortottica ed Assistenza Oftalmologica*"

Course: Physics

ademic Year Lecturer

05/2006 University of Palermo, Faculty of Medicine and Surgery

04/2005 1st level degree in "*Ortottica ed Assistenza Oftalmologica*"

Course: Optics

ademic Year Lecturer (Fisica Medica)

02/2003 University of Palermo, Faculty of Medicine and Surgery

1st level degree in "*Technician in Psichiatric Rehabilitation* "

Course: Physics

ON INSTITUTIONAL TEACHING ACTIVITY

no Accademico **Lecturer**

m 2011/2012 University of Palermo

2012/2013 2nd level Master in “Applied biotechnologies and bioinformatics for the study and diagnosis of genetic diseases”

Course: Stochastic Processes

no Accademico **Lecturer**

m 2011/2012 University of Palermo

2012/2013 2nd level Master in “Applied biotechnologies and bioinformatics for the study and diagnosis of genetic diseases”

Course: Gene ontology and statistical analysis

ademic Year **Lecturer**

03/2004 University of Siena, Department of Mathematical and Information Technology Sciences "R. Magari"

1st level Master in *Bioinformatics* **"Alberto Del Lungo"**

Course: Probabilistic Models

ademic Year **Tutor**

)2/2003 Master in "*Quantitative methods and operative strategies in the managing of financial risk*"

2nd level Master, University of Palermo.

tober 1997 University Teacher

ne 1999 Loughborough University, Faculty of Engineering, Loughborough (UK)

Course: Mathematics

RICERCHE FINANZIATE

LOCAL RESEARCH PROJECTS

October 2010 Principal Investigator of the research project funded by UNIPA CORI2010 – azione D

Title: *Funds for inviting the foreign scholar Sandro Wimberger (Heidelberg)*

University of Palermo, Palermo (I)

January 2009 Principal Investigator of the research project funded by CRRNSM (AF 2007)

Title: *Gene Ontology statistical investigation of complex diseases*

University of Palermo, Palermo (I)

April 2003 Young Researchers Project

University of Palermo, Palermo (I)

Project: *Study of Stochastic Processes with multiple Timescales in Complex Systems*

Scientific Tutor: Prof. Rosario N. Mantegna

INTERNATIONAL RESEARCH PROJECTS

Research Network: *Complexity Research Initiative for Systemic InstabilitieS (CRISIS)*

(UE STREP – FP7) Coordinator: Prof. Domenico Delli Gatti (Italy)

Local coordinator: Prof. R. N. Mantegna

Research Project: *New tools in the credit network modeling with agents' heterogeneity (NETHET)*

(INET - USA) Coordinator: Prof. R. N. Mantegna

Research Project: *Empirically grounded agent based models for the future ATM scenario (ELSA)*

(UE SESAR JU) Coordinator: Deep Blue (Italy). Contract Reference: 10-220719-C18

Local coordinator: **Salvatore Miccichè**

Research Network: *Complex World Network: mastering complexity safely*

(UE SESAR JU) Coordinator: Innaxis (Spain) Contract Reference: 10-220210-C3

Local coordinator: Fabrizio Lillo

Coordination Project: *General Integration of the Applications of Complexity in Science (GIACS)*

(UE – NEST FP6) Coordinator: Prof. S. Solomon

Local coordinator: Prof. R. N. Mantegna

Strep Project: *Human behaviour through dynamics of complex social networks: an interdisciplinary approach (DYSONET)*

(UE – NEST FP6) Coordinator: Prof. P. Argyrakis

Local coordinator: Prof. R. N. Mantegna

Strategic Project: *High Frequency Dynamics in Financial Markets.*

(MIUR) National coordinator: Prof. R. N. Mantegna (University of Palermo, Italy)

Local coordinator: Prof. R. N. Mantegna (University of Palermo, Italy)

Italy-Spain Project: *Mesoscopics of a stock market.*

(MIUR) National coordinator: Prof. R. N. Mantegna

Local coordinator: Prof. R. N. Mantegna

FIRB (MIUR): *Cellular Self-Organizing nets and chaotic nonlinear dynamics to model and control complex system.*

National coordinator: Prof. L. Fortuna (University of Catania, Italy)

Local coordinator: Prof. R. N. Mantegna (University of Palermo, Italy)

FISR (MIUR): *Un nuovo approccio al drug-design: dalla meccanica statistica allo screening di farmaci antivirali.*

National coordinator: Prof. P. Carloni (SISSA, Trieste)

Local coordinator: Prof. R. N. Mantegna (University of Palermo, Italy)

PUBBLICAZIONE

Review Papers

R2) F. Lillo, S. Micciché

High frequency data entry: statistical findings at high frequency

in: Encyclopedia of Quantitative Finance, Editor-in-Chief: Rama Cont, John Wiley & Sons Ltd., UK, (2010)

ISBN: 978-0-470-05756-8

R1) F. Lillo, S. Micciché, R. N. Mantegna

Econofisica: il contributo dei fisici allo studio dei sistemi economici.

Il Nuovo Saggiatore, **21 (1-2)**, 68-81, (2005)

ISSN: 1827-6148

Journal Papers (ISI)

J27) S. Micciché

Empirical Study on the relationship between the Cross-Correlation among Stocks and the Stocks' Volatility Clustering

J. Stat. Mech., accepted for publication (2013)

http://papers.ssrn.com/sol3/papers.cfm?abstractid=2158434

J26) S. Micciché, F. Lillo, R. N. Mantegna.

The role of unbounded time-scales in generating long-range memory in additive markovian processes.

Fluctuation and Noise Letters, **in press** (2013)

J25) S. Miccichè, A. Buchleitner, F. Lillo, R. N. Mantegna, T. Paul, S. Wimberger.

Anomalous decay from a quantum well with power-law tail.

New Journal of Physics, **15**, 033033 (2013)

DOI: 10.1088/1367-2630/15/3/033033; WoS-ID: not yet present

J24) M. Tumminello, S. Miccichè, J. Varho, J. Piilo, R. N. Mantegna

Quantitative analysis of gender stereotypes and information aggregation in a national election.

PLoS ONE, **8** (3), e58910, (2013)

DOI: 10.1371/journal.pone.0058910; WoS-ID: not yet present

J23) M. Tumminello, S. Miccichè, L. J. Dominguez, G. Lamura, M. G. Melchiorre, M. Barbagallo, R. N. Mantegna

Happy aged people are all alike, while every unhappy aged person is unhappy in its own way.

PLoS ONE, **6** (9), e223377, (2011)

DOI: 10.1371/journal.pone.0023377; WoS-ID: 000294802800002

IF: 4.092; ISI citations: 3; SCOPUS citations: 4

J22) M. Tumminello, S. Miccichè, F. Lillo, J. Piilo, R. N. Mantegna

Statistically validated networks in bipartite complex system.

PLoS ONE, **6** (3), e17994, (2011)

DOI: 10.1371/journal.pone.0017994; WoS-ID: 000289057200017

IF: 4.092; ISI citations: 4; SCOPUS citations: 5

J21) M. Tumminello, S. Miccichè, F. Lillo, J. Varho, J. Piilo, R. N. Mantegna

Community characterization of heterogeneous complex systems.

J. Stat. Mech., P01019, (2011)

DOI: 10.1088/1742-5468/2011/01/P01019; WoS-ID: 000286629000022

IF: 1.727; ISI citations: 4; SCOPUS citations: 3

J20) S. Miccichè

First Passage Time Distribution of multi-scale stationary Markovian processes.

EPL, **92** (5), 50011, (2010)

DOI: 10.1209/0295-5075/92/50011; WoS-ID: 000286222700011

IF: 2.753; ISI citations: 0; SCOPUS citations: not present

J19) S. Miccichè

Role of conditional probability in multi-scale stationary Markovian processes.

Phys. Rev E, **82**, 011104, (2010)

DOI: 10.1103/PhysRevE.82.011104; WoS-ID: 000279553400001

IF: 2.352; ISI citations: 1; SCOPUS citations: 0

J18) F. Calì, G. Ruggeri, M. Vinci, C. Meli, C. Carducci, V. Leuzzi, S. Pozzessere, P. Schinocca, A. Ragalmuto, V. Chiavetta, S. Miccichè and V. Romano

Exon deletions of the PAH gene in Italian hyperphenylalaninemics

EMM, **42** (2) , 81-86, (2010)

DOI: 10.3858/emm.2010.42.2.009; WoS-ID: 000275039300001

IF: 2.453; ISI citations: 3; SCOPUS citations: 3

J17) C. Coronnello, M. Tumminello, S. Miccichè, R. N. Mantegna

Networks in biological systems: An investigation of the Gene Ontology as an evolving network.

Nuovo Cimento C, **32**, 157-160, (2009)

DOI: 10.1393/ncc/i2009-10386-7; WoS-ID: 000273305000034

IF: 0.277; ISI citations: 0; SCOPUS citations: not present

J16) S. Miccichè

Modeling long-range memory with stationary Markovian processes.

Phys. Rev. E, **79**, 031116, (2009)

DOI: 10.1103/PhysRevE.79.031116; WoS-ID: 000264767300035

IF: 2.400; ISI citations: 5; SCOPUS citations: 3

J15) M. Spanó, F. Lillo, S. Miccichè, R. N. Mantegna

Statistical properties of thermodynamically predicted RNA secondary structures in viral genomes

EPJB, **65**, 323-331, (2008)

DOI: 10.1140/epjb/e2008-00276-8; WoS-ID: 000260122300003

IF: 1.568; ISI citations: 1; SCOPUS citations: 1

J14) L. Tranchina, S. Basile, M. Brai, A. Caruso, C. Cosentino, S. Miccichè

Distribution of heavy metals in marine sediments of Palermo Gulf (Sicily, Italy)

Water, Air, & Soil Pollution, **191**, 245-256, (2008)

DOI: 10.1007/s11270-008-9621-3; WoS-ID: 000256011700018

IF: 1.398; ISI citations: 13; SCOPUS citations: 14

J13) C. Borghesi, M. Marsili, S. Miccichè

Emergence of time-horizon invariant correlation structure in financial returns by subtraction of the market mode. Phys. Rev. E, **76**, 026104, (2007)

DOI: 10.1103/PhysRevE.76.026104; WoS-ID: 000249154700009

IF: 2.483; ISI citations: 14; SCOPUS citations: 13

J12) M. Tumminello, C. Coronnello, F. Lillo, S. Miccichè, R. N. Mantegna

Spanning Trees and bootstrap reliability estimation in correlation based networks.
IJBC, **17 (7)**, 2319-2329, (2007)

DOI: 10.1142/S0218127407018415; WoS-ID: 000252021900008

IF: 0.910; ISI citations: 33; SCOPUS citations: 33

J11) M. Montero, J. Perello, J. Masoliver, F. Lillo, S. Miccichè, R. N. Mantegna

Scaling and data collapse for the mean exit time of asset prices.
Phys. Rev. E, **72**, 056101, (2005)

DOI: 10.1103/PhysRevE.72.056101; WoS-ID: 000233603200010

IF: 2.418; ISI citations: 25; SCOPUS citations: 23

J10) C. Coronnello, M. Tumminello, F. Lillo, S. Miccichè, R. N. Mantegna

Sector identification in a set of stock return time series traded at the London Stock Exchange.
Acta Physica Polonica B, **36 (9)**, 2653-2679, (2005)

DOI: not available; WoS-ID: 000232226500006

IF: 0.807; ISI citations: 25; SCOPUS citations: 26

J9) M. Spanó, F. Lillo, S. Miccichè, R. N. Mantegna

Inverted Repeats in Viral Genomes

Fluctuation and Noise Letters, **5 (2)**, L193-L200, (2005)

DOI: 10.1142/S0219477505002550; WoS-ID: 000231893000011

IF: 0.650; ISI citations: 2; SCOPUS citations: not present

J8) L. Tranchina, S. Miccichè, A. Bartolotta, R. N. Mantegna, M. Brai

Posidonia oceanica as a historical monitor device of lead concentration in marine environment.

Environ. Sci. Technol., **39 (9)**, 3006-3012, (2005)

DOI: 10.1021/es048870u; WoS-ID: 000228781700027

IF: 4.054; ISI citations: 13; SCOPUS citations: 13

J7) G. Bonanno, G. Caldarelli, F. Lillo, S. Miccichè, N. Vandewalle, R. N. Mantegna

Networks of equities in financial markets

EPJ B, **38**, 363-371, (2004)

DOI: 10.1140/epjb/e2004-00129-6; WoS-ID: 000221447300030

IF: 1.426; ISI citations: 76; SCOPUS citations: 75

J6) S. Miccichè, G. Bonanno, F. Lillo, R.N. Mantegna

Degree stability of a minimum spanning tree of price return and volatility

Physica A, **324**, 66-73, (2003)

DOI: 10.1016/S0378-4371(03)00002-5; WoS-ID: 000183262400011

IF: 1.180; ISI citations: 38; SCOPUS citations: 40

J5) S. Miccichè, G. Bonanno, F. Lillo, R.N. Mantegna

Volatility in financial markets: stochastic models and empirical results

Physica A, **314**, 756-761, (2002)

DOI: 10.1016/S0378-4371(02)01187-1; WoS-ID: 000179502800100

IF: 1.369; ISI citations: 36; SCOPUS citations: 32

J4) E. d'Emilio, S. Miccichè

Infrared asymptotic dynamics of gauge invariant charged fields: QED versus QCD

Phys. Rev. D, **61**, 045010, (2000)

DOI: 10.1103/PhysRevD.61.045010; WoS-ID: 000085383200045

IF: 3.838; ISI citations: 0; SCOPUS citations: 0

J3) S. Miccichè, J.B. Griffiths

Soliton solutions with real poles in the Alekseev formulation of the inverse-scattering method

Class. Quantum Grav., **17**, 1-9, (2000)

DOI: 10.1088/0264-9381/17/1/301; WoS-ID: 000084746200003

IF: 1.989; ISI citations: 2; SCOPUS citations: 1

J2) J.B. Griffiths, S. Miccichè

The extension of gravitational soliton solutions with real poles

Gen. Rel. Grav., **31**, 869-888, (1999)

DOI: 10.1023/A:1026638305384; WoS-ID: 000080857300006

IF: 1.133 (2000); ISI citations: 1; SCOPUS citations: 0

J1) J.B. Griffiths, S. Miccichè

The Weber-Wheeler-Bonnor pulse and phase-shift in gravitational soliton interactions

Phys. Lett. A, **233**, 37-42, (1997)

DOI: 10.1016/S0375-9601(97)00441-6; WoS-ID: A1997XT13000007

IF: 1.122 (2000); ISI citations: 0; SCOPUS citations: 0

Conference Papers and Proceedings (ISI)

PI3) C. Coronnello, M. Tumminello, F. Lillo, S. Miccichè, R. N. Mantegna

Economic sector identification in a set of stocks traded at the New York Stock Exchange: a comparative analysis. in: NOISE AND STOCHASTICS IN COMPLEX SYSTEMS AND FINANCE, Proceedings of SPIE; Volume: 6601, (2007)

Conference: Noise and Stochastics in Complex Systems and Finance; Florence, ITALY, MAY 21-24, 2007.

Edited by: Kertesz, J; Bornholdt, S; Mantegna, RN

DOI: 10.1117/12.729619; WoS-ID: 000250322700020

ISI citations: 4; SCOPUS citations: 5

PI2) S. Micciché, F. Lillo, R.N. Mantegna

Correlation based hierarchical clustering in financial time series.
in: Complexity, Metastability and Nonextensivity; Book Series: SCIENCE AND CULTURE SERIES: PHYSICS - *E. Maiorana Conferences special series* ; Volume: 26 Pages: 327-335; Word Scientific.

Conference: 31st Workshop of the International-School-of-Solid-State-Physics; Erice, ITALY, JUL 20-26, 2004.

Edited by C. Beck, A. Rapisarda, C. Tsallis

DOI: 0.1142/97898127015580037; WoS-ID: 000234590500037

ISI citations: 0; SCOPUS citations: not present

PI1) S. Micciché, F. Lillo, G. Bonanno, R.N. Mantegna

Univariate and multivariate statistical aspects of equity volatility.

in Application of Econophysics; Proceedings of: "The Second Nikkey Econophysics Research Workshop and Symposium"(Springer Verlag, Tokio),

Conference: 2nd Nikkei Econophysics Symposium on Application of Econophysics; :TOKYO, JAPAN, NOV 12-14, 2002.

Edited by H. Takayasu

DOI: 10.1117/12.729619; WoS-ID: 000187421800004

ISI citations: 1; SCOPUS citations: not present

Chapters in books

C3) M. Zanin, M. Balbás, R. Herranz, D. Rivas, R. Vázquez, H. Blom, H. Helmke, F Lillo, R. Mantegna, S. Miccichè, A. Cook and G. Tanner

Complexity in Air Traffic Management

in: *The Next Global Scenarios - The Systemic Approach and the 21st Century Challenges*. Aracne Editrice srl., Roma, (2011), Edited by: S. Affuso, S. D'Alessandro, G. Marini

ISBN: 978–88–548–4270–0

C2) V. Romano, C. Coronnello, S. Miccichè, S. Sbacchi, R. N. Mantegna

Autism Spectrum Disorders: from candidate genes to candidate ontology terms

in*: Causes and Risk Factors for Autism*, Nova Science Publishers Inc., New York, (2009).,

Edited by: Alessia C. Giordano, Viola A. Lombardi.

ISBN: 978-1-60456-861-5

C1) C. Coronnello, M. Tumminello, F. Lillo, S. Miccichè, R. N. Mantegna.

Economic sector identification in a set of stocks traded at the New York Stock Exchange: a comparative analysis.

in: Advanced Topics On Cellular Self-Organizing Nets And Chaotic Nonlinear Dynamics To Model And Control Complex Systems. World Scientific (Singapore), (2008). World Scientific Series on Nonlinear Science, Series A - Vol. 63.

Edited by: Riccardo Caponetto, Luigi Fortuna, Mattia Frasca.

ISBN: 978-981-281-404-3.

Conference Papers and Proceedings

P5) S. Vitali. M. Cipolla, S. Miccichè, R. N. Mantegna, G. Gurtner, F. Lillo, V. Beato, S. Pozzi

Statistical Regularities in ATM: network properties, trajectory deviations and delays.

in: *Proceedings of the SESAR Innovation Days (2012) EUROCONTROL*. 27th-29th November 2012, Brauschweig, Germany. Edited by D. Schaefer

ISBN: 978-2-87497-024-5

P4) F. Lillo, S. Miccichè, R. N. Mantegna, V. Beato, S. Pozzi

ELSA Project: Toward a complex network approach to ATM delays analysis.

in: *Proceedings of the SESAR Innovation Days (2011) EUROCONTROL*. 29th November - 1st December 2011, Toulose, France. Edited by D. Schaefer

ISBN: 978-2-87497-024-5

P3) C.A. Hoenselaers, S. Miccichè

Transcendental solutions of the Sine-Gordon equation

in: *Relativity Today* (Akadémiai Kiadó, Budapest), Proceedings of: "The Sixth Hungarian Relativity Workshop"

17-22 July 2000, Budapest, Hungary

edited by C. A. Hoenselaers, Z. Perjes.

ISBN: 963-0-579-294

P2) G. Bonanno, F. Lillo, S. Micciché, R.N. Mantegna

Hierarchical structures in complex systems: from DNA to financial markets

in: *Attractors, Signals and Synergetics* (Pabst Science Publishers, Lengerich), Proceedings of: "Euroattractor 2000"

6-15 June 2000, Warsaw, Poland

edited by W. Klonowski

ISBN: 3-936142-09-2

P1) C.A. Hoenselaers, S. Micciché

Transcendental solutions of the Sine-Gordon equation

in: *CRM Proceedings and Lecture Notes, 29, (2001)* (Americal Mathematical Society), Proceedings of: "AARMS-CMR Workshop on Bäcklund and Darboux Transformations. The Geometry of Soliton Theory"

4-8 June 1999, Halifax (Nova Scotia), Canada

edited by P. Winternitz.

ISBN: 978-0-8218-2803-8

Submitted/Manuscripts

S2) F. Lillo, S. Micciché, M. Tumminello, J. Piilo, R. N. Mantegna.

How News Affect the Trading Behavior of Different Categories of Investors in a Financial Market

http://papers.ssrn.com/sol3/papers.cfm?abstractid=2109337

S1) J. T. Lunardi, S. Micciché, F. Lillo, R. N. Mantegna, M. Gallegati.

Do firms share the same functional form of their growth rate distribution? A new statistical test.

http://lanl.arXiv.org/abs/1103.2234

M2) S. Micciché

Gene-based and semantic structure of the Gene Ontology as a complex network

http://arxiv.org/abs/1211.2349

M1) F. Lillo, S. Micciché, R.N. Mantegna

Long-range correlated stationary Markovian processes

http://xxx.lanl.gov/abs/cond-mat/0203442

Abstracts

L. Tranchina, A. Bartolotta, M. Brai, M. C. D'oca, M. Marrale, S. Micciché

Proprietà del segnale ESR di dosimetri a tartarato di ammonio irradiati con radiazione di diverso LET.

XC Congresso Nazionale SIF 2004. 20-25 Settembre 2004. (pp. 19)

S. Micciché, G. Bonanno, F. Lillo, R.N. Mantegna

Degree Stability of a Minimum Spanning Tree of Price Returns and Volatility

in: *Abstracts* of: "INFMeeting, National Conference on the Physics of Matter"

23-25 June 2003, Genova, Italy

S. Micciché, G. Bonanno, F. Lillo, R.N. Mantegna

Volatility model based on a nonlinear Langevin equation

in: *Abstracts* of: "INFMeeting, National Conference on the Physics of Matter"

24-28 June 2002, Bari, Italy

Chairman S. Solimeno

S. Miccichè, G. Bonanno, F. Lillo, R.N. Mantegna

Volatility in equity markets; empirical analysis and comparison with known models

in: *Abstracts* of: "INFMeeting, National Conference on the Physics of Matter"

18-22 June 2001, Rome, Italy

Chairman L. Pietronero

S. Miccichè, F. Lillo, R.N. Mantegna

On stationary stochastic processes with persistent autocorrelation

in: *Abstracts* of: "INFMeeting, National Conference on the Physics of Matter"

18-22 June 2001, Rome, Italy

Chairman L. Pietronero

S. Miccichè, J.B. Griffiths

Physical properties of gravitational solitons

in: *Abstracts of Plenary Lectures and Contributed Papers* of: "15th International Conference on General Relativity and Gravitation"

16-23 December 1997, Pune, India

edited by N. Dadhich

AMBITI DI RICERCA

RESEARCH ACTIVITY

Analysis of economic and financial systems

i) In the analysis of financial systems I am interested in the statistical characterization and in the theoretical modeling of volatility. Such research involves either an empirical characterization of volatility time series obtained from high frequency (intraday) data and the modeling of the stylized fact of volatility in terms of stochastic processes. I am also interested in the role of cross-correlations between volatility time series in determining the property of persistence and volatility clustering. A robust modeling of volatility plays a crucial role in the risk management procedures and in the context of option pricing.

ii) I am also interested in the analysis of the multivariate properties of financial time series. By using clustering techniques I am interested in the analysis of the main factors within a financial market. In particular, we investigate the existence of structures in the financial markets that are invariant with respect to the time horizon over which one computes the price returns.

iii) As for the economic systems, I am interested in the analysis of firm's growth rates. Specifically, we intend to investigate the existence of clusters of firms and their relevance in the attempt at explaining what is the role played by firms heterogeneity in determining the asymptotic behaviour of the growth rate distribution.

Network Analysis of social systems

I am interested in the quantitative analysis of social systems by using Network Theory techniques. The novelty in our approach is that the links between two any agents of the system are obtained after performing a statistical test in which the relevant variables are tested against some null hypothesis. Having that, the network of virtual interactions amongst the agents is obtained by using only the links that results to be statistically significant under the chosen null hypothesis, rather than all possible links. Such methodology, which provides a statistically based filtering technique, can be applied either to categorical and numerical variables.

I am also interested in understanding what is the role of an exogenous source of information, such as the news in a financial market, in determining the evolution of a given complex system.

Analysis of biological systems

i) I am interested in the statistical analysis of data obtained from microarray experiments performed on patients affected by complex or multifactorial diseases such as Autism. I)n particular, I am interested in the statistical validation of Ontology terms which are significant for a specific complex disease. More generally, I am interested in the characterization of Gene Ontology in terms of networks and in the quantification of the amount of information shared by an ontological analysis and a clustering analysis of the same genomic data.

ii) I am also interested in the application of network theory to biological complex systems, such as the bipartite system of micro-RNA and their target genes.

iii) I am also interested in the analysis of particular biological systems (*Posidonia Oceanica*) that may be used as indicators of pollution levels in marine environment.

Stochastic Processes

i) In the context of stochastic processes, my main interest is devoted to the empirical and theoretical characterization of stochastic processes with long-range interactions and to the application of these results to the analysis of complex systems such as financial markets and biological systems.

ii) The Fokker-Planck equation that characterizes Markovian stochastic processes admits a representation in terms of a Schrodinger equation with an appropriate quantum potential. I am interested in the study of quantum systems with such potential with the aim of understanding how the long-memory properties carry over at the level of quantum systems..

SCIENTIFIC COLLABORATIONS (ongoing)

Collaboration with Prof. S. Wimberger (Heidelberg University, Heidelberg, Germany)

The research project with Prof. Sandro Wimberger regards the investigation of Hamiltonian quantum systems that shows a power-law decaying Survival Probability.

Mauro Gallegati (Università Politecnica delle Marche, Ancona, Italia)

J. Tadeu Lunardi (Universidade Estadual de Ponta Grossa, Ponta Grossa, Brasile)

The project deals with the analysis of firms' growth rates. Specifically, our research aims at understanding the role of cross-correlation between firms in determining some of the observed stylized facts of firms.

Jyrki Piilo (University of Turku, Finland)

The project deals with the investigation of the investment portfolios of finnish banks. We have a unique database containing the information, in anonymized form, of all the investment profiles if single investors operating in the Nordic Market Exchange.

Giulia Iori (City University, London, UK)

The project deals with the network properties of the banks operating in the e-MID interbank market.

BIBLIOMETRIC INDICATORS (updated 14/11/2012)

Number of publication in WoS/SCOPUS: 26

Total number of citations: 311

Average number of citation per paper: 11.96; Max number of citation per paper: 76

Total Impact Factor: 46.491

Average Impact Factor per paper: 2.021; Max Impact Factor per paper: 4.092

H-index: 9

Contemporary H-index: 9