

daniele regoli

PhD - theoretical physics

curriculum vitae

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born on september 15, 1982 in Imola (Bologna), Italy

“live as if you were to die tomorrow. learn as if you were to live forever.”
Mohandas Gandhi

what i do now

since December 2015

Post-doc position in the Quantitative Finance group of the Scuola Normale Superiore, Pisa, for research in social BigData analysis and complex network mining, inside the European project [SoBigData: Social Mining & Big Data ecosystem](#).

advisor

Prof. Fabrizio Lillo

experience

October 2013
September 2015

Post-doc position in the Quantitative Finance group of the Scuola Normale Superiore, Pisa, for the project “Stability and coherence with the expectations of the market of the long term scenarios used in the management of financial risks” in collaboration with UniCredit Bank.

advisor

Prof. Stefano Marmi

specific project

“Dynamics of the implicit market ratings for sovereign debt emitters”

main results:

building a market implied ratings algorithm with 2-dimensional input space via a Support Vector Machine learning method

main skills/
issues

– *credit ratings*. Credit Rating Agencies, implied ratings, Credit Default Swaps, Default probability
– *credit scoring models*. statistical and learning methods for ratings and bankruptcy prediction
– *machine learning*. Support Vector Machines, Neural Networks, Genetic Algorithms, Clustering

- *credit migration models*. Markov migration models, Hidden Markov models
- *contingent claims analysis*. Merton model, sovereign CCA: Balance sheet analysis for sovereigns, Central Bank’s role
- *R, Python* programming

May 2011-
May 2013

Post-doc position at the Department of Mathematics of the University of Padova, working on applications of physics and mathematics in economics, finance and social sciences.

advisor Prof. Paolo Dai Pra

project “stochastic models for Economics and Finance with long and short term dependences”

main result finding a simple stochastic interacting system producing an emergent periodic behavior

principal skills/
issues stochastic processes – emergent behavior – complex systems – mean-field models – default contagion – growth optimal portfolio – numerical solution of Differential Equations

education

10/2010-
04/2011

Financial Mathematics: post-graduate course (“corso di alta formazione”) at the Mathematics Department of the University of Bologna about mathematical modeling of financial markets.

director Prof. Andrea Pascucci

issues stochastic calculus in finance – Matlab programming – numerical methods for partial differential equations – econometrics – financial derivatives – pricing and hedging methods – interest rates – risk management

01/2008-
04/2011
advisor

PhD in Theoretical Physics, University of Bologna.

Dr. Alexander Kamenshchik

research issues classical cosmology – renormalization group in gravity – (loop) quantum gravity

thesis “The relation between Geometry and Matter in Classical and Quantum Gravity and Cosmology” ([arXiv:1104.2910 \[gr-qc\]](https://arxiv.org/abs/1104.2910)).

keywords phantom dark energy models – cosmic magnetic fields – PT symmetric Quantum Theory – Loop Quantum Gravity – Spinfoam models for Quantum Gravity

01/2010-
07/2010

six months period of research at the *Centre de Physique Théorique* in Marseille (France), in the Quantum Gravity group led by Prof. Carlo Rovelli.

19/10/2007

Master’s degree cum laude in Theoretical Physics, University of Bologna.

thesis “Reconstruction of potentials in two-field cosmological models”

issue classical cosmology

advisor	Prof. Giovanni Venturi
co-advisor	Dr. Alexander Kamenshchik
keywords	relativistic cosmology – phantom energy – scalar fields – two-field models
14/10/2005	Bachelor's degree cum laude in Physics, University of Bologna.
thesis	"Quantum properties of light"
issue	quantum optics
advisor	Prof. Elisa Ercolessi
keywords	quantum optics – coherent states – Wigner quasi-probability distributions
07/2001	Diploma of scientific high school (100/100), Liceo Scientifico Luigi Valeriani, Imola.

computer skills

OS	Windows; GNU-Linux: Ubuntu/Red Hat
office	Word, Excel, Powerpoint, OpenOffice
scientific	numerical simulations and analysis: R, Matlab, Octave, Scilab; symbolic: Mathematica, Sage
graphics	Gimp/Photoshop, Inkscape, Ipe, ...
programming	Python, (basics of C++)
typesetting	L ^A T _E X

languages

- italian: native language
- ◐ english: fluent
- french: basic (but improving, hopefully)

professional interests

- quantitative methods applied to economics and social sciences; mathematical finance
- ◐ complex networks, data mining, machine learning, classification problems
- probability theory, statistical mechanics, complex systems, mainly applied to economics and social sciences

perspectives and aspirations

gershwin: “life is a lot like jazz...it’s best when you improvise”

other interests

science (physics, cosmology, quantum gravity...). music (listening, studying, reading...). history. reading (classics, philosophy, science, art, architecture, music, economics, religion,...). writing. art. trees. cooking. cinema. jogging. hiking. actually i end up being interested in (almost) everything i do.

schools and collaborations

- 06/2015 participation to the *Applied Bayesian Statistics (ABS)* school in Como “Modern Bayesian Methods and Computing for the Social Sciences”: Bayesian statistics, Hierarchical models, Markov Chain Monte Carlo, JAGS – Professor Jeff Gill, WUSTL.
- 09/2012 participation to the *Summer School in Probability*, Bologna.
- 08/2012 participation to the fifth *European Summer School in Financial Mathematics*, held in Paris, École Polytechnique: Optimal Transport and Finance – Professors Filippo Santambrogio and Nizar Touzi; Skorokhod Embedding problems in Finance – Professor Jan Obloj.
- 07/2011 participation to the Summer School in “*Numerical methods and stochastic calculus in finance*” organized by Scuola Matematica Interuniversitaria (SMI) in Cortona (Italy).
- 01/2010-07/2010 collaboration with the *Quantum Gravity group* headed by Prof. Carlo Rovelli at the *Centre de Physique Théorique* in Marseille.
- 21-07/01-08 2008 participation at the *Summer School in Cosmology* organized by the *International Center of Theoretical Physics (ICTP)*, Trieste (Italy).

publications

- b** *preprint* S. Marmi, A. Nassigh, and D. Regoli, “Sovereign ratings implied by coupled CDS-bond market data” available on SSRN: ssrn.com/abstract=2512238 .
- b** P. Dai Pra, G. Giacomini and D. Regoli, “Noise-induced periodicity: some stochastic models for complex biological systems” *Mathematical Models and Methods for Planet Earth*, Springer INdAM Series 6, 25-35 (2014); DOI: [10.1007/978-3-319-02657-2_3](https://doi.org/10.1007/978-3-319-02657-2_3).
- b** P. Dai Pra, M. Fischer and D. Regoli, “A Curie-Weiss model with dissipation” *Journal of Statistical Physics* 152, 1, 37-53 (2013); DOI: [10.1007/s10955-013-0756-2](https://doi.org/10.1007/s10955-013-0756-2), (arXiv:1305.0288 [math.PR]).
- b** E. Bianchi, D. Regoli and C. Rovelli, “Face amplitude of spinfoam quantum gravity” *Classical and Quantum Gravity* 27, 185009 (2010); DOI: [10.1088/0264-9381/27/18/185009](https://doi.org/10.1088/0264-9381/27/18/185009), (arXiv:1005.0764 [gr-qc]).

A. A. Andrianov, F. Cannata, A. Y. Kamenshchik and D. Regoli, “Phantom Cosmology based on PT -symmetry”, International Journal of Modern Physics D 19, 97 (2010); DOI: [10.1142/S0218271810016269](https://doi.org/10.1142/S0218271810016269).

A. A. Andrianov, F. Cannata, A. Y. Kamenshchik and D. Regoli, “Cosmology of non-Hermitian (C)PT-invariant scalar matter”, J. Phys. Conf. Ser. 171, 012043 (2009); DOI: [10.1088/1742-6596/171/1/012043](https://doi.org/10.1088/1742-6596/171/1/012043).

F. Cannata, A. Y. Kamenshchik and D. Regoli, “Scalar field cosmological models with finite scale factor singularities”, Physics Letters B 670, 241-245 (2009); DOI: [10.1016/j.physletb.2008.06.077](https://doi.org/10.1016/j.physletb.2008.06.077), (arXiv:0801.2348v1 [gr-qc]).

A. A. Andrianov, F. Cannata, A. Y. Kamenshchik and D. Regoli, “Two-field cosmological models and large-scale cosmic magnetic fields”, Journal of Cosmology and Astroparticle Physics 10 019 (2008); DOI: [10.1088/1475-7516/2008/10/019](https://doi.org/10.1088/1475-7516/2008/10/019), (arXiv:0806.1844v1 [hep-th]).

A. A. Andrianov, F. Cannata, A. Y. Kamenshchik and D. Regoli, “Reconstruction of scalar potentials in two-field cosmological models”, Journal of Cosmology and Astroparticle Physics 02 015 (2008); DOI: [10.1088/1475-7516/2008/02/015](https://doi.org/10.1088/1475-7516/2008/02/015), (arXiv:0711.4300 [gr-qc]).

teaching

2011/2012

teaching assistant for the class in Statistics of the course of study in Biology at the University of Padova.

Various lecturing experiences on introduction to R software for data analysis

Various lecturing experiences on credit rating modeling and credit risk

Pisa, March 5, 2016

Daniele Regoli

I declare, as per the provision of the law DPR 445/2000, that all the information contained in this document is truthful. I am aware of the rights under Art.13 of law 675/96 and d.lgs. 196/2003 and I consent my personal data to be used solely for selection purposes.

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