CURRICULUM VITAE OF ELISABETTA SCOPPOLA

Date of birth: May 11, 1955 in Rome, Italy

Affiliation: Dipartimento di Matematica e Fisica - Università di Roma Tre
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Education: Degree in Physics cum laude
Università di Roma "La Sapienza" 1979
Dissertation on Stochastic Mechanics and application to instanton problem
Advisor: Prof. G.Jona-Lasinio

Positions held:
1980-1983 Fellowship by Accademia Nazionale dei Lincei - Rome
1983-1993 University of Rome "La Sapienza", research assistant in Physics
1993-1994 University of Bari, associate professor in Theoretical Physics
1994-2015 Roma Tre University, associate professor in Mathematical Physics
2015- Roma Tre University, full professor in Mathematical Physics

Academic visits:
Centre de Physique Theorique- CNRS - Luminy- Marseille (France)
Laboratoire de Physique Theorique et Hautes Energies, Universite' Paris VI
Institut des Hautes Etudes Scientifiques - Bures-sur-Yvette, (France)
Laundau Institute- Accademia delle Scienze - Mosca (URSS)
University of California - Irvine (USA)
University of California -Los Angeles (USA)
California Institute of Technology - Pasadena (USA)
Universita' di San Paolo (Brasile)
IMPA - Istituto di Matematica Pura ed Applicata -Rio de Janeiro (Brasile)
Mittag-Leffler Institute - Stoccolma (Svezia)
Isaac Newton Institute - Cambridge (Inghilterra)
Universiteit Nijmegen (Olanda)
Eurandom Eindhoven (Olanda)
Université Paris-Est Creteil (France)
IMéRA - Marseille (France)

Invited talks:

- "Rencontre sur le methodes semiclassiques en Mechanique Quantique" - Marseille 1984

- VIIIth International Congress on Mathematical Physics" - Marseille 1986

- "Stochastic Processes- Geometry and Physics" - Ascona 1990

- "Probabilistic Methods in Mathematical Physics" - Certosa di Pontignano, Siena 1991

- Statphys 18 - Berlino 1992

- "Probability Theory of Spatial Disorder and Phase Transition" - Cambridge 1993

- II European Congress of Mathematics - Budapest 1996

- "Stochastic Models from Statistical Physics" - Eurandom, Eindhoven 1999

- Accadenia Nazionale dei Lincei: "A day for women in math" - Roma 1999

- Minicorso al workshop: "Finite Markov chains and applications"- Roma 2000

- "Field Theory and Statistical Mechanics" - Roma 2002

- Invited paper al 6th World Congress of the Bernoulli Society Barcelona 26-31 July 2004.

- "Interacting Stochastic Systems" EURANDOM, Eindhoven 2005

- Joint International Meeting UMI-DMV 18/22-6-2007 - Perugia

- Berlin Leipzig Seminar Analysis/probability theory Third Meeting Winter Term 2007/08 8-2-08 - Berlino

- XII Brasilian School of Probability Minicourse:"Introduction to Metastability" Ouro Preto (Brasile) 3-9 agosto 2008

- First CIRM-HCM Joint Meeting: Stochastic analysis, SPDEs, Particle Systems, Optimal Transport 2010 (Trento, Italy)

- 10th Cologne-Twente Workshop on Graphs and Combinatorial Optimization, 2011 (Frascati, Italy)

- Fifth Worshop on Random Dynamical Systems, 2012 Bielefeld

- SPA 2014 - Organizer of the Invited Session on Metastability

Research interests:
Semiclassical limit of Quantum Mechanics.
Quasicrystals.
Anderson localization.
Convergence to equilibrium, metastability.
Markov Chain Monte Carlo and optimisation problems.

Publications:

1) G.Jona-Lasinio, F.Martinelli, E.Scoppola
"Stochastic dynamics approach to tunneling problems in Quantum Mechanics".
Colloquia Mathematica Societatis Janos Bolyai 27.
Random Fields, Esztergom (1979) pg. 609-615

2) G.Jona-Lasinio, F.Martinelli, E.Scoppola
"New Approach to the Semiclassical Limit of Quantum Mechanics.
I. Multiple Tunneling in one Dimension".
Comm.Math.Phys. 80, 223-254 (1981)

3) G.Jona-Lasinio, F.Martinelli, E.Scoppola
"Description of the Semiclassical limit of Quantum Mechanics in terms of Diffusion
Processes".
Lect.Notes in Phys. 153, 132-133 (1981)

4) G.Jona-Lasinio, F.Martinelli, E.Scoppola
"The Semiclassical Limit of Quantum Mechanics:
a Qualitative Theory via Stochastic Mechanics".
Phys.Rep. 77, No3, 313-327 (1981)

5) G.Jona-Lasinio, F.Martinelli, E.Scoppola
"Decaying Quantum Mechanical States:
an informal discussion within Stochastic Mechanics".
Lett. Nuovo Cim. 34, No1, 13-17 (1982)

6) S.De Gregorio, E.Scoppola, B.Tirozzi
"Periodic orbits of dynamical systems with chaotic behavior".
Lect.Notes in Phys. 173, 67 (1982)

7) S.De Gregorio, E.Scoppola, B.Tirozzi
"A Rigorous Study of Periodics Orbits by means of a Computer".
Jour.Stat.Phys.32, n.1, 25 (1983)

8) J.Bellissard, E.Scoppola

"The Density of States for Almost Periodic Schroedinger Operators and the Frequency

Module: a counter-example".

Comm.Math.Phys. 85, 301-308 (1982)

9) J.Bellissard, R.Lima, E.Scoppola

"Localization in ν-dimensional incommensurate structures".

Comm.Math.Phys. 88, 465 (1983)

10) E.Scoppola

"Quantum particle in a hierarchical potential ".

Proceedings "Rencontre sur le Methodes semiclassiques en Mechanique Quantique".

Marseille (1984), pg. 83

11) G.Jona-Lasinio, F.Martinelli, E.Scoppola

"Quantum particle in a hierarchical potential with tunneling over arbitrarily large

scales".

Journ.of Phys. A 17, L635-L638 (1984)

12) F.Martinelli, E.Scoppola

"Remark on the Absence of Absolutely Continuous Spectrum for d-dimensional

Schroedinger Operators with Random Potential for large disorder

or low energy".

Comm.Math.Phys.97, 465-471 (1985)

13) F.Martinelli, E.Scoppola

"Absence of Absolutely Continuous Spectrum in the Anderson Model for large disorder

or low energy".

Research Notes in Mathem. 124 Pitman Adv. Publ.Program London 1985, 94-97

14) G.Jona-Lasinio, F.Martinelli, E.Scoppola

"Multiple Tunneling in d-dimensions: a Quantum Particle in a Hierarchical Potential".

Ann.Inst.H.Poin. 42, n1, 73-108 (1985)

15) J.Frohlich, F.Martinelli, E.Scoppola, T.Spencer

"Constructing proof of localization in the Anderson tight binding model".

Comm.Math.Phys. 101, 21-46 (1985)

16) G.Jona-Lasinio, F.Martinelli, E.Scoppola

"Tunneling in one dimension:

general theory, instabilities, rules of calculation, applications".

"Mathematics + Physics, Lectures on Recent Results" Vol.II,

L.Streit (Ed.), pg. 227, World Scientific Publ. - Singapore (1986)

17) J.Bellissard, D.R.Grempel, F.Martinelli, E.Scoppola

"Localization of electrons with spin-orbit or magnetic interactions in a 2-D disordered

crystal".

Phys.Rev.B 33, 641 (1986)

18) F.Martinelli, E.Scoppola

"Introduction to the mathematical theory of Anderson localization".

10 , La Riv.del Nuovo Cimento.(1987)

19) F.Martinelli, E.Scoppola

"Rigorous results on Anderson localization".

VIIIth International Congress on Mathematical Physics- July 1986

Marseille- Ed.MMebkhout, R.Seneor, World Scientific Singapore 1987, pg.731

20) F.Martinelli, E.Scoppola

"Random composition of two rational maps: singularity of the invariant measure".

J. Stat. Phys. 50, 1021, (1988)

21) F.Martinelli, E.Scoppola
"Small random perturbations of dynamical systems:
exponential loss of memory of the initial conditions".
Comm.Math. Phys.120, 25, (1988)

22) F.Martinelli, E.Scoppola
"On stochastic flows arising from small random perturbations of dynamical systems".
C.R.Acad.Sci.Paris, 308, 105 (1989)

23) F.Martinelli, E.Olivieri, E.Scoppola
"Small random perturbations of finite and infinite dimensional dynamical systems:
unpredictability of exit times".
J. Stat.Phys. 55, 477 (1989)

24) J.Bellissard, B.Jochum, E.Scoppola, D.Testard
"Spectral properties of one dimensional quasicrystals".
Comm.Math.Phys. 125 , 527-543 (1989)

25) F.Martinelli, E.Olivieri, E.Scoppola
"On the loss of memory of initial conditions for some stochastic flows".
In "Stochastic Process-Geometry and Physics"
Ed.S.Albeverio, pg. 585, World Scientific (1990)

26) F.Martinelli, E.Olivieri, E.Scoppola
"Rigorous analysis of low temperature stochastic Ising models:
metastability and exponential approach to equilibrium".
Europhysics Letters 12 N2 , 223 (1990)

27) F.Martinelli, E.Olivieri, E.Scoppola
"Metastability and exponential approach to equilibrium for low temperature stochastic
Ising model".
J.Stat.Phys. 61, 1105 (1990)

28) F.Martinelli, E.Olivieri, E.Scoppola

"On the Swendsen and Wang dynamics I. Exponential convergence to equilibrium".

J.Stat.Phys.62, 117 (1991)

29) F.Martinelli, E.Olivieri, E.Scoppola

"On the Swendsen and Wang dynamics II. Critical droplets and homogeneous

nucleation at low temperature for the two dimensional Ising model".

J.Stat.Phys. 62,135 (1991)

30) F.Martinelli, E.Scoppola

"A simple stochastic cluster dynamics: rigorous results".

J.Phys.A:Math.and Gen. 24, 3135 (1991)

31) F.Martinelli, L.Sbano, E.Scoppola

"Small random perturbation of dynamical systems: recursive multiscale analysis".

Stochastics and Stochastic Reports 49, 253-272 (1994)

32) E.Scoppola

"A model of stochastic cluster dynamics with non Gibbsian invariant measure".

"Probabilistic Methods in Mathematical Physics- Certosa di Pontignano, Siena -1991.

Ed. F.Guerra, M.Loffredo, C.Marchioro - World Scientific - Singapore (1992) pg. 404

33) E.Scoppola

"Metastability and nucleation for 2-dimensional Ising systems".

Invited papers from Statphys 18 - Physica A 194, (1993) , 271.

34) E.Scoppola

"Renormalization group for Markov chains and application to metastability".

J.Stat.Phys. 73, 83 (1993)

35) E.Scoppola
"Metastability for Markov chains:
a general procedure based on renormalization group ideas".
" Probability and phase transition"
Ed. G.R.Grimmett - Kluwer Acad.Publ.(1994) pg.303-322

36) E.Scoppola
"Renormalization and graph methods for Markov chains".
"Advances in Dynamical Systems and Quantum Physics"
S.Albeverio, R.Figari, E.Orlandi, A.Teta Ed. - World Scientific 1995

37) E.Olivieri, E.Scoppola
"Markov chains with exponentially small transition probabilities:
first exit problem from a general domain. I-The reversible case."
J. Stat.Phys. 79, 613-647 (1995)

38) E.Olivieri, E.Scoppola
"Markov chains with exponentially small transition probabilities:
first exit problem from a general domain. II-The general case."
J.Stat.Phys. 84, 987-1041 (1996)

39) E.Olivieri, E.Scoppola
"Metastability and typical exit paths in stochastic dynamics".
Proceedings of the ECM2 Budapest 1996.
Progr. in Math. 169, 124-150 Birkhauser, Boston (1998)

40) F.den Hollander, E.Olivieri, E.Scoppola
"Metastability and nucleation for conservative dynamics".
J.Math.Phys. 41, 1424-1498 (2000)
(special issue: *Probabilistic Methods in Statistical Physics*)

41) F.den Hollander, E.Olivieri, E.Scoppola
"Nucleation in fluids: some rigorous results".
Physica A, 279, 110-122 (2000).

42) F.den Hollander, E.Olivieri, E.Scoppola
"Metastability and nucleation for conservative dynamics".
Markov Processes Relat. Fields, 7, 51-53 (2001)

43) F.den Hollander, F.Nardi, E.Olivieri, E.Scoppola
"Droplet growth for three-dimensional Kawasaki dynamics"
PTRF, 125, 153-194 (2003)

44) F.Manzo, F.Nardi, E.Olivieri, E.Scoppola
"On the Essential Features of Metastability:
Tunnelling Time and Critical Configurations"
J.Stat.Phys. 115, 591-642 (2004)

45) F.Nardi, E.Olivieri, E.Scoppola
"Anisotropy effects in nucleation for conservative dynamics" J.Stat.Phys. 119, 539-595 (2005)

46) A.Gaudilliere, E.Olivieri, E.Scoppola
"Nucleation pattern at low temperature for local Kawasaki dynamics in two dimensions"
M.P.R.F. **11**, n.4, 553-628 (2005)

47) A.Iovanella, B.Scoppola, E.Scoppola
"Some spin glass ideas applied to the clique problem" JSP (2006) DOI: 10.1007/s10955-006-9255-z JSP 126, 4/5 (2007) 895-915

48) A.Gaudilliere, F.den Hollander, F.Nardi, E.Olivieri, E.Scoppola
Ideal gas approximation for a two-dimensional rarefied gas under Kawasaki dynamics doi:10.1016/j.spa.2008.04.008 Stochastic Processes and their Applications 119 (2009), pp. 737-774

49) E.Olivieri, E.Scoppola
An introduction to metastability through random walks Braz. J. Probab. Stat. Volume 24, Number 2 (2010), 361-399.

50) A.Gaudilliere, B.Scoppola, E.Scoppola, M.Viale
Phase transition for the cavity approach to the clique problem on random graphs J.Stat.Phys. (2011) 145, 1127-1155

51) P. Dai Pra, B. Scoppola, E. Scoppola

Sampling from a Gibbs measure with pair interaction by means of PCA J.Stat.Phys. (2012) 149, 722-737

52) P.Dai Pra, B.Scoppola, E.Scoppola

"Fast mixing for the low temperature 2d Ising model through irreversible parallel dynamics"

Journal of Statistical Physics, 159 (2015), no. 1, 1-20

DOI 10.1007/s 10955-014-1180-y.

53) R.Fernandez, F.Manzo, F.R.Nardi, J.Sohier, E.Scoppola

"Conditioned, quasi-stationary, restricted measures and escape from metastable states"

ANNALS OF APPLIED PROBABILITY, vol. 26, num. 2, pp. 760-793 (2016)

54) R. Fernandez, F. Manzo, F. R. Nardi, E. Scoppola

"Asymptotically exponential hitting times and metastability: a pathwise approach without reversibility"

ELECTRONIC JOURNAL OF PROBABILITY, vol. 20, pp. 1-37 (2015)

55) Procacci, Aldo and Scoppola, Benedetto and Scoppola, Elisabetta,

Probabilistic cellular automata for low-temperature 2-d Ising model,

Journal of Statistical Physics, vol. 165, num. 6, pp. 991–1005 (2016)

56) A.Asselah, E.N.M.Cirillo, B.Scoppola, E.Scoppola,

On diffusion limited deposition,

ELECTRONIC JOURNAL OF PROBABILITY, vol. 21, pp. 1-29 (2016)

57) Procacci, Aldo and Scoppola, Benedetto and Scoppola, Elisabetta,

Effects of boundary conditions on irreversible dynamics, Annales Henri Poincar'e.

Journal of Theoretical and Mathematical Physics, vol. 19, num. 2, pp. 443–462 (2018)

58) F.Manzo, E.Scoppola

Exact results on the first hitting via conditional strong quasi-stationary times and applications to metastability

Journal of Statistical Physics, in press