

**CURRICULUM VITAE
GIACOMO GRADENIGO**

PERSONAL DATA

Giacomo Gradenigo

born March 19th, 1981

Italian, male, married

EDUCATION

Laurea (Vecchio Ordinamento quadriennale; equiv. Master degree): University of Padova, Physics Department, 22-03-2006, Padova, Italy. Marks: **110/110**

Advisor: **Prof. Giancarlo Benettin**. Title: “*Study of energy exchanges in the vicinity of equilibrium for mono and bi-dimensional FPU systems*”.

Ph.D. in Physics: University of Trento, Physics Department, 12-11-2009, Trento, Italy.

Advisor: **Dr. Paolo Verrocchio**. Title: “*The study of surface tension within the Random First-Order Theory of glass transition*” ([“http://eprints-phd.biblio.unitn.it/136/”](http://eprints-phd.biblio.unitn.it/136/)).

CAREER

- **December 2009 - November 2012:** Post-doctoral research associate at “Istituto Sistemi Complessi” (ISC-CNR) and University “Sapienza”, Roma. Project “*Granular Gases to explore Non-Equilibrium Statistical Mechanics*” (FIRB-IDEAS grant number RBID08Z9JE), P. I. Dr. Andrea Puglisi.

- **December 2012 - November 2013:** Post-doctoral research associate at “Institut de Physique Théorique (IPhT)”, CEA, Saclay, France. Project “*New Strategies for the Glass Transition: from Equilibrium theories to Aging dynamics*”, P.I Prof. Silvio Franz (LPTMS, Orsay); Supervision: Prof. Silvio Franz, Dr. Giulio Biroli.

- **December 2013 - November 2014:** “Chair Junior CNRS” at “Laboratoire de Physique Théorique et Modèles Statistiques (LPTMS)”, Université Paris-Sud, France. Project “*New Strategies for the Glass Transition: from Equilibrium theories to Aging dynamics*”, P.I Prof. Silvio Franz (LPTMS, Orsay); Supervision: Prof. Silvio Franz, Dr. Giulio Biroli. Founded by “LabEx PALM Investissement d’Avenir” (grant ANR-10-LABX-0039-PALM).

- **December 2014 - June 2017:** Post-doctoral research associate at “Laboratoire Interdisciplinaire de Physique (LIPhy)”, Université Joseph Fourier, Grenoble, France. Project “*Driven glasses: from statistical physics to materials properties*” (ERC Grant No. ADG20110209) P.I. Prof. Jean-Louis Barrat (LIPhy, Grenoble); Supervision: Prof. Jean-Louis Barrat, Dr. Eric Bertin.

- **September 2017 - August 2019:** Post-doctoral research associate at “Sapienza” University of Rome, Rome, Italy. Project: “*Fisica statistica dei sistemi vetrosi e della fotonica in mezzi complessi*” (“Statistical physics of glassy systems and of complex media photonics”) (Simons foundation grant n. No. 454949). P.I. Prof. Giorgio Parisi; Supervision: Prof. Giorgio Parisi, Dr. Luca Leuzzi.

QUALIFICATIONS

- **France** 02/2014 (valid for 4 years): Idoneous for “Maître de Conférences” position (Assistant Professor), valid for Universities in France.
- **United Kingdom** 03/2014: Third classified (idoneus) for “Lecturer” position at King’s College, London, Great Britain.
- **Italy** 08/2017 (valid for 6 years): Idoneous for “Professore di II Fascia” position for the subjects area “FIS 02/A2: Fisica Teorica delle Interazioni Fondamentali”, valid for Universities in Italy (Abilitazione Scientifica Nazionale).
- **Italy** 08/2017 (valid for 6 years): Idoneous for “Professore di II Fascia” position for the subjects area “FIS 02/B2: Fisica Teorica della Materia”, valid for Universities in Italy (Abilitazione Scientifica Nazionale).

COMPUTER SKILLS

Languages: Fortran, C, C++, Python;

Operative Systems: UNIX, LINUX, Windows;

Softwares: Mathematica, Latex, Awk, Gnuplot, Emacs.

SPOKEN LANGUAGES

Italian (mother tongue)

English (fluent)

French (fluent)

RESEARCH AREAS

My work in all the the areas of statistical physics is characterized by an approach where I carry on in parallel both the numerical simulations of the specific model, with techniques ranging from standard Molecular Dynamics to non-local Monte Carlo algorithms, and the development of the theory in the appropriate framework.

- NON-EQUILIBRIUM STATISTICAL MECHANICS

Statistical mechanics of systems with dry friction

Problem: range of validity of the effective Edwards thermodynamics for the absorbing states of dissipative systems characterized by dry friction.

Theory: Transfer matrix techniques, field theoretical approach, Langevin equation with coloured noise.

Numerics: Molecular Dynamics simulations, data analysis.

Granular fluids

Problem: Study of non-equilibrium fluctuations and correlations in models of two-dimensional granular fluids; entropy productions of hydrodynamic modes.

Theory: Study of the linearized fluctuating hydrodynamic equations; Onsager-Machlup formula for entropy production in systems with stochastic dynamics.

Numerics: “Event-driven” molecular dynamics simulations for two-dimensional hard disks (efficient for dilute regimes).

Entropy production and large deviations

Problem: Study of the Large Deviations for the entropy production in schematic models of granular gases, models of active matter; Fluctuation Relation from the point of view of Large Deviations; Large Deviations in mass transport models.

Theory: Moments generating function, Legendre transform, saddle-point method, ensembles inequivalence, canonical ensemble calculations.

Numerics: Molecular Dynamics simulations; implementation of a biased Monte-Carlo algorithm to sample rare events.

Anomalous transport in driven (glassy) systems

Problem: Study of the field-induced super-diffusive behaviour in Continuous-Time Random Walks (CTRW) models and in one-dimensional Kinetically Constrained Models of glasses; Ratchet effect for an asymmetric intruder in an aging glass.

Theory: Master Equation for the displacement probability distribution, *strong* anomalous diffusion, non-Gaussian effects, dynamic phase coexistence in Kinetically Constrained Models.

Numerics: Kinetic Monte-Carlo algorithms (rejection-free algorithms) for Kinetically Constrained Models on a one-dimensional lattice; Field-free Monte-Carlo algorithm for the non-equilibrium response to external perturbations of an atomistic liquid model (offlattice simulations).

- EQUILIBRIUM DYNAMICS AND THERMODYNAMICS OF GLASSES

Amorphous order in structural glasses

Problem: Theoretical definition and numerical implementation of the procedure to measure the characteristic lengthscale of *amorphous order* in glassy systems (e.g. supercooled liquids); study of the *point-to-set* correlation function (multipoint correlation); study on the influence on the glass-forming properties of the medium of the confining geometry; dynamical heterogeneities in glasses.

Theory: “Random First-Order Transition” theory for glasses; Kac p-spin models; study of the Franz-Parisi potential, replica field theory, One-Step Replica Symmetry Breaking.

Numerics: Monte-Carlo offlattice algorithms for 3D atomistic systems, soft-spheres and Lennard-Jones interaction potentials. Swap Monte-Carlo algorithm (non-local updates) to equilibrate in the deeply supercooled regime. Offlattice Monte-Carlo algorithms with constrained order parameter (overlap). Implementation of amorphous boundary conditions for confined supercooled liquids. Grand-Canonical Monte-Carlo dynamics of lattice glass models (Biroli-Mezard model).

Lattice models with kinetic constraints

Problem: Nature of the glass transition, dynamic phenomenon or thermodynamic singularity? Study of *possible* thermodynamic singularities in lattice models with kinetic constraints.

Theory: Lattice plaquettes models for glasses; Belief-Propagation (BP) equations on random (Erdős-Rény) graphs; One-Step Replica Symmetry Breaking solutions of the BP equations; characterization of the configurational entropy.

Numerics: Kinetic Monte-Carlo algorithms for lattice plaquette models; deterministic algorithms for Constrained Satisfaction Problems; numerical iterative methods to solve the Belief-Propagation equation.

Glassy behaviour of light in Random Lasers (in progress)

Problem: Phase diagram study of glassy models for the behaviour of light in Random Lasers.

Theory: Mean-field models of glasses; spherical p-spin models with disordered couplings, 2+4 body interactions and complex variables; One-Step and Full Replica Symmetry Breaking mean-field solutions.

Numerics: Monte-Carlo simulations of the spherical p-spin model with disordered couplings; hybrid (C-CUDA) Monte-Carlo algorithms optimized with parallel updates on graphic cards (GPUs).

SCIENTIFIC REFERENCES

Prof. Giorgio Parisi Email giorgio.parisi@roma1.infn.it, Dipartimento di Fisica, “Sapienza” Università di Roma, Piazzale A. Moro 2, 00185 Roma.

Dr. Luca Leuzzi Email luca.leuzzi@roma1.infn.it, Dipartimento di Fisica, “Sapienza” Università di Roma, Piazzale A. Moro 2, 00185 Roma.

Prof. Jean-Louis Barrat Email: Jean-Louis.Barrat@ujf-grenoble.fr “Laboratoire Interdisciplinaire de Physique” (LIPhy), 140 Avenue de la Physique - 38402 Saint Martin d’Hères, Université Grenoble-Alpes, France.

Dr. Eric Bertin Email: eric.bertin@ujf-grenoble.fr “Laboratoire Interdisciplinaire de Physique” (LIPhy), 140 Avenue de la Physique - 38402 Saint Martin d’Hères, Université Grenoble-Alpes, France.

Prof. Silvio Franz Email: silvio.franz@lptms.u-psud.fr, “Laboratoire de Physique Théorique et Modèles Statistiques” (LPTMS), Université Paris Sud - Bâtiment 100, 15 rue Georges Clémenceau, 91405 Orsay CEDEX, France.

Prof. Angelo Vulpiani Email *angelo.vulpiani@roma1.infn.it* , Dipartimento di Fisica, “Sapienza” Università di Roma, Piazzale A. Moro 2, 00185 Roma.

Prof. Dr. Andrea Puglisi Email: *andrea.puglisi@roma1.infn.it* , “Istituto Sistemi Complessi” (ISC-CNR) e Dipartimento di Fisica, “Sapienza” Università di Roma, P.le A. Moro 2, 00185 Roma.

Prof. Dr. Andrea Cavagna Email: *andrea.cavagna@roma1.infn.it* , “Istituto Sistemi Complessi” (ISC-CNR), via dei Taurini 19, 00185 Roma.

TEACHING AND SUPERVISORING

• **Teaching** In the University of Trento I got a contract for 40 hours of tutoring for the students of the first year of “Laurea Triennale” (Bachelor degree) for the academic year 2007/2008. My tutoring activity consisted in proposing to the students and solving together with them, within an open discussion, some exercises focused on the subjects treated in the first courses of the Bachelor (Mechanics, Thermodynamics).

List of subjects treated : Mechanics: 1) Kinematics; 2) Elementary mechanics, forces and conservation of energy; 3) Vectorial calculus with forces; 4) Angular momentum; 5) Static and dynamic friction. 6) Equivalence principle for inertial and non-inertial systems. Thermodynamics: 1) Thermodynamic equilibrium; 2) First and second law of thermodynamics; 3) Thermodynamic of reversibles and irreversibles transformations; 4) Carnot cycle; 5) Entropy production in irreversible transformations.

• **Supervising** During my post-docs in Rome and Paris I was the co-supervisor of three Masters degree thesis:

Candidate: Roberto Trozzo. Thesis defended in February 2011 at “Sapienza”, University of Rome. Title: Numerical study of a supercooled liquid confined in a slab geometry: correlation functions and interface energy. Supervisors: Prof. G. Parisi, Dr. A. Cavagna.

Candidate: Alessandro Manacorda Thesis defended in September 2012 at “Sapienza”, University of Rome. Title: A model of granular ratchet with dry friction. Supervisor: Dr. A. Puglisi.

Candidate: Stefano Spigler Thesis defended in September 2014 at “Laboratoire de Physique Théorique et Modèles Statistiques”. Title “Plaquette models for glasses”. Supervisor: Prof. Silvio Franz.

CONFERENCES ORGANIZATIONS

2012 ‘**Non-equilibrium fluctuation-response relations**’, Giglio Island, June 5th-8th.
Organizing committee: Dr. G. Gradenigo, Dr. A. Puglisi, Dr. A. Sarracino.
Scientific committee: Prof. U. M. B. Marconi, Prof. L. Rondoni, Prof. A. Vulpiani.

SUMMER SCHOOLS

1. July 2007, “**16 Summer School of Parallel Calculus**”, Centro di Calcolo del CINECA, Casalecchio di Reno (Bologna), Italia.

2. July 2008, “**Les-Houches Summer School: Long Range Interacting Systems**”, Les-Houches, Francia.

List of speakers: 1) Statistical Physics: D. Mukamel, J. Kurchan, D. Dubin; 2) Mathematical Aspects: R. S. Ellis, F. Castella; 3) Applications: T. Padmanabhan, B. Turkington, D. Escande, S. Bramwell, A. Pikovsky.

3. July 2013, “**Beg-Rohu Summer School: Disordered Systems**”, Beg-Rohu, Quiberon, Francia.

List of speakers: 1) Anderson Localization and Beyond: B. Altshuler; 2) Universal features of Slow Dynamics in Random Media: G. Ben Arous; 3) Random Matrix Theory and its Applications: S. Majumdar; 4) Mean-field theory of glassy systems and beyond: G. Parisi.

COMMUNICATIONS AT INTERNATIONAL CONFERENCES

11-2014 Talk title: “*Rare events in driven one-dimensional models*”. Event: “Large Deviations in Statistical Physics”, Stellenbosch, South-Africa.

07-2013 Talk title: “*Confinement as a tool to probe amorphous order*”. Event: “Physics of glassy and granular materials”, satellite meeting of the international conference STATPHYS 25, Yukawa Institute for Theoretical Physics, Kyoto, Japan.

03-2012 Talk title (**INVITED**): “*Static correlation lengths and domain walls energy in a glass-forming liquid model under confinement*”. Event: “Rejuvenating concepts in glass physics”, follow up meeting of “Unifying concepts in glass physics V”, Institut Henri Poincaré, Paris, France.

10-2011 Talk title: “*Fluctuating hydrodynamics theory for a driven granular fluid: out of equilibrium correlations*”. Event: “Foundations and Applications of Non-Equilibrium Statistical Mechanics”, NORDITA, Stockholm, Sweden.

09-2011 Talk title: “*Thermostats, large scale fluctuations and entropy productions in granular fluids*”. Event: “ZCAM conference on Granular and Active Fluids”, Zaragoza Scientific Center for Advanced Modeling, Zaragoza, Spain.

07-2010 Talk title: “*Aging regime in a fragile glass-former: study of a brownian motor*”. Event: “XXIV IUPAP International Conference on Statistical Physics”, Cairns, Australia.

03-2010 Talk title: “*A phase separation perspective on dynamical heterogeneities*”. Event: “XII International Workshop on Complex Systems”, Andalo, Italy.

05-2008 Talk title: “*Amorphous surface tension and the Random First-Order Transition theory*”. Event: “99th Statistical Mechanics Conference”, Rutgers University, New Jersey, USA.

COMMUNICATIONS AT NATIONAL CONFERENCES OR LABORATORIES

- 06-2017 Title: *“Effective thermodynamics for a driven athermal system with dry friction”*. Place: “French-Indian meeting on plasticity and rheology in amorphous solids”, LIPhy, Grenoble, France.
- 04-2016 Title: *“Thermodynamic theory of active matter”*. Place: “Physique Statistique et Modélisation” group, “Laboratoire Interdisciplinaire de Physique” (LIPhy), Grenoble, France.
- 05-2016 Title: *“Field-induced superdiffusion in models with a glassy dynamics”* **INVITED** (Prof. M. Baiesi). Place: University of Padova, Department of Physics and Astronomy, Italy.
- 02-2016 Title: *“Effective thermodynamics for a driven athermal system with dry friction”*. Place: “Laboratoire de Physique Théorique et Modèles Statistiques” (LPTMS), Orsay, France.
- 10-2015 Title: *“Temperature and Correlations in Driven Dissipative Systems”*, **INVITED** (Dr. J. Tailleur). Place: “Matiere et Systemes Complexes” (MSC), Université Paris VII (Diderot), Paris, France.
- 11-2015 Title: *“Temperature and Correlations in Driven Dissipative Systems”*, **INVITED** (Prof. T. Dauxois). Place: ENS Lyon, Lyon, France.
- 10-2015 : *“From slow to fast: Field-induced superdiffusion of a probe in models with a glassy dynamics”*. Place: “Physique Statistique et Modélisation” group, “Laboratoire Interdisciplinaire de Physique” (LIPhy), Grenoble, France.
- 10-2015 Title: *“Field-induced superdiffusion in a model with glassy dynamics”*. Place: workshop “FISMAT 2015”, Palermo, Italy.
- 07-2015 Title: *“Effective thermodynamic theory for a driven athermal system with dry friction”*. Place: “Physique Statistique et Modélisation” group, “Laboratoire Interdisciplinaire de Physique” (LIPhy), Grenoble, France.
- 06-2015 Title: *“Effective thermodynamic theory for a driven athermal system with dry friction”*. Place: GDR French national workshop “Fluides Actifs”, ENS Lyon, France.
- 05-2015 Title: *“Effective thermodynamic theory for a system with dry friction”* **INVITED** (A. Puglisi). Place: “Sapienza” University, Rome.
- 01-2015 Title: *“Plaquette models for glasses and constraint satisfaction problems”*. Title: “Physique Statistique et Modélisation” group, “Laboratoire Interdisciplinaire de Physique” (LIPhy), Grenoble, France.
- 10-2014 Title: *“Glassy properties of a XOR-SAT model in finite dimensions”*. Place: “Laboratoire de Physique Théorique et Modèles Statistiques” (LPTMS), Orsay, France.
- 05-2014 Title: *“Local effective action for a glass-forming liquid: a numerical study”*, **INVITED** (Prof. J.-L. Barrat). Place: “Laboratoire Interdisciplinaire de Physique” (LIPhy), Grenoble, France..
- 04-2014 Title: *“Local effective action for a glass-forming liquid: a numerical study”*, **INVITED** (Dr. O. Benichou). Place: “Laboratoire de Physique Théorique de la Matière Condensée” (LPTMC), Université Paris VI (Jussieu), Paris.

- 04-2014 Title: “*Local effective action for a glass-forming liquid: a numerical study*”, **INVITED** (Prof. L. Berthier). Place: Laboratoires Charles Coulomb, Montpellier, France.
- 01-2014 Title: “*Driven anomalous dynamics: breaking of the Einstein relation and scaling properties*”, **INVITED** (D. Grebenkov). Place: École Polytechnique, Palaiseau, France.
- 07-2012 Title: “*Out-of-equilibrium correlations and entropy production in a driven granular fluid*”. Place: “XVII Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi”, Physics department of Parma, Italy.
- 05-2012 Title: “*Einstein relation for anomalous superdiffusive dynamics*”, **INVITED**. Place: Physics department of Parma, Italy.
- 01-2012 Title: “*Fluctuating hydrodynamics for a driven granular fluid: out-of-equilibrium correlations*”. Place: “Journées de Physique Statistique”, École Supérieure de Physique et Chimie Industrielles (ESPCI), Paris, France.
- 07-2011 Title: “*Study of a glass-forming liquid in a confined geometry : correlation lengths and interfaces of amorphous states*”, **INVITED**. Place: “Institut de Physique Théorique” (IPhT), CEA, Saclay, France.
- 07-2010 Title: “*Aging regime in a fragile glass-former: study of a brownian motor*” . Place: “XV Convegno di Fisica Statistica”, Physics department of Parma, Italy.
- 05-2009 Title: “*Surface tension and a new spinodal point for amorphous order in supercooled liquids*”. Place: “Disordered System and Neural Networks” group, Department of Mathematics, Kings College, London, United Kingdom.
- 05-2009 Title: “*Surface tension and a new spinodal point for amorphous order in supercooled liquids*”, **INVITED** (Dr. Andrea Puglisi). Place: “Istituto Sistemi Complessi” (CNR-ISC), Physics department of “Sapienza”, Rome.
- 08-2008 : Oral presentation at the summer school “Les Houches Summer School 2008: Long Range Interacting Systems”, Les Houches, France.

POSTER COMMUNICATIONS

- 05/2015: Poster at the international conference “Viscous Liquids IV”, Montpellier.
- 09/2013: Poster at the international conference “Large deviations and rare events in physics and biology”, Physics department of “Sapienza” university, Rome, Italy.
- 12/2011: Poster at the international conference “Unifying concepts in glass physics V”, Institut Henri Poincare, Paris, France.
- 03/2011: Poster at the international conference “Workshop on Dynamics in Viscous Liquids III”, Physics department of “Sapienza” university, Rome.
- 09/2010: Poster at the international conference “Anomalous Transport: from Billiards to Nanosystems”, Sperlonga, Italy.
- 09/2009: Poster at the international conference “6th International Discussion Meeting on Relaxations in Complex Systems”, Physics department of “Sapienza” university, Rome.

PUBLICATIONS AND REFEREE ACTIVITY

• **Publications** I published **26** papers on international journal (**H-index 12 ISI**), **3** conference proceedings, and a book chapter “Nonequilibrium Statistical Physics of Small Systems: Fluctuation Relations and Beyond” (Wiley-VCH, Weinheim, 2013) R. Klages, W. Just, C. Jarzynski (Eds.). I have at present 1 paper in preparation.

• **Referee Activity** Physical Review Letters, Physical Review X, Physical Review E, Journal of Statistical Mechanics: Theory and Experiments, Journal of Chemical Physics, New Journal of Physics

PUBLISHED PAPERS DIVIDED BY SUBJECTS

Non-equilibrium statistical mechanics - Large Deviations

[1] “Participation Ratio for Constraint-Driven Condensation with Superextensive Mass”

G. Gradenigo, E. Bertin,
Entropy 517, 19(10) (2017).

[2] “Generalized Edwards thermodynamics and marginal stability in a driven system with dry and viscous friction”

G. Gradenigo, E. Bertin,
Phys. Rev. E 95, 030106 (2017).

[3] “Edwards thermodynamics for a driven athermal system with dry friction”

G. Gradenigo, E. E. Ferrero, E. Bertin, J.-L. Barrat,
Phys. Rev. Lett. 115, 140601 (2015).

[4] “Fluctuation relations without uniform large deviations ”,

G. Gradenigo, A. Sarracino, A. Puglisi, H. Touchette,
J. Phys. A: Math. Theor. 46, 335002, (2013).

[5] “Brownian ratchet in a thermal bath driven by Coulomb friction ”,

A. Gnoli, A. Petri, F. Dalton, **G. Gradenigo**, G. Pontuale, A. Sarracino, A. Puglisi,
Phys. Rev. Lett. 110, 120601 (2013).

[6] “Entropy production in non-equilibrium fluctuating hydrodynamics”

G. Gradenigo, A. Puglisi and A. Sarracino,
J. Chem. Phys. 137, 014509 (2012).

[7] “Non-equilibrium fluctuations in a driven stochastic Lorenz gas”

G. Gradenigo, U. Marini Bettolo Marconi, A. Puglisi, and A. Sarracino,
Phys. Rev. E 85, 031112 (2012).

[8] “Dynamics of a massive intruder in a homogeneously driven granular fluid”

A. Puglisi, A. Sarracino, **G. Gradenigo**, and D. Villamaina,
Granular Matter 14, 235 (2012).

- [9] “Structure factors in granular experiments with homogenous fluidization”
A. Puglisi, A. Gnoli, **G. Gradenigo**, A. Sarracino, and D. Villamaina,
J. Chem. Phys. 136, 014704 (2012).
- [10] “Non-equilibrium length in granular fluids: From experiment to fluctuating hydrodynamics”
G. Gradenigo, A. Sarracino, D. Villamaina, and A. Puglisi,
Europhys. Lett. 96, 14004 (2011).
- [11] “Fluctuating hydrodynamics and correlation lengths in a driven granular fluid”
G. Gradenigo, A. Sarracino, D. Villamaina, and A. Puglisi,
J. Stat. Mech. P08017 (2011).
- [12] “Irreversible dynamics of a massive intruder in dense granular fluids”
A. Sarracino, D. Villamaina, **G. Gradenigo** and A. Puglisi,
Europhys. Lett. 92, 34001 (2010).

Anomalous diffusion

- [13] “Field-induced superdiffusion and dynamical heterogeneities”
G. Gradenigo, E. Bertin, G. Biroli,
Phys. Rev. E 93, 060105 (2016).
- [14] “Rare events and scaling properties in field-induced anomalous dynamics ”,
R. Burioni, **G. Gradenigo**, A. Sarracino, A. Vezzani, A. Vulpiani,
J. Stat. Mech. P09022 (2013).
- [15] “Einstein relation in superdiffusive systems”
G. Gradenigo, A. Sarracino, D. Villamaina, and A. Vulpiani,
J. Stat. Mech. L06001 (2012).
- [16] “On anomalous diffusion and the out of equilibrium response function in one-dimensional models”
D. Villamaina, A. Sarracino, **G. Gradenigo**, A. Puglisi, and A. Vulpiani,
J. Stat. Mech. L01002 (2011).

Glass-forming systems

- [17] “Response to ”Comment on Static correlations functions and domain walls in glass-forming liquids: The case of a sandwich geometry” [J. Chem. Phys. 144, 227101 (2016)]”
G. Gradenigo, R. Trozzo, A. Cavagna, T. Grigera,
J. Chem. Phys. 144, (2016).
- [18] “The Random-Diluted Triangular Plaquette Model: study of phase transitions in a Kinetically Constrained Model”,
S. Franz, **G. Gradenigo**, S. Spigler,
Phys. Rev. E 93, 032601 (2016).
- [19] “Confinement as a tool to probe amorphous order ”,
C. Cammarota, **G. Gradenigo**, G. Biroli,
Phys. Rev. Lett. (Editor’s suggestion) 111, 107801 (2013).

[20] “Static correlations functions and domain walls in glass-forming liquids: the case of a sandwich geometry”

G. Gradenigo, R. Trozzo, A. Cavagna, T. Grigera, P. Verrocchio,
J. Chem. Phys. 138, 12A509 (2013).

[21] “The Ratchet effect in an ageing glass ”

G. Gradenigo, A. Sarracino, D. Villamaina, T. Grigera, A. Puglisi,
J. Stat. Mech. L12002 (2010).

[22] “Phase-Separation Perspective on Dynamic Heterogeneities in Glass-Forming Liquids”

C. Cammarota, A. Cavagna, I. Giardina, **G. Gradenigo**, T.S. Grigera, G. Parisi, P. Verrocchio,
Phys. Rev. Lett. (Editor’s suggestion) 105, 055703 (2010).

[23] “Numerical determination of the exponents controlling the relationship between time, length and temperature in glass-forming liquids”

C. Cammarota, A. Cavagna, **G. Gradenigo**, T.S. Grigera, P. Verrocchio,
J. Chem. Phys. 131, 194901 (2009).

[24] “Evidence for a spinodal limit for amorphous excitations in glassy system”

C. Cammarota, A. Cavagna, **G. Gradenigo**, T.S. Grigera, P. Verrocchio,
J. Stat. Mech. L12002 (2009).

Dynamical systems

[25] “Fluctuations in partitioning systems with few degrees of freedom”

L. Cerino, **G. Gradenigo**, A. Sarracino, D. Villamaina, A. Vulpiani,
accepted on Phys. Rev. E (2014).

[26] “A study of the Fermi-Pasta-Ulam problem in dimension two”

G. Benettin and **G. Gradenigo**,
Chaos 18, 013112 (2008).

PAPERS IN PREPARATION

- “First-order transitions in the Large Deviations of non-interacting Run-and-Tumble particles”

G. Gradenigo, S. N. Majumdar.

PROCEEDINGS OF INTERNATIONAL CONFERENCES

1. “The out of equilibrium response function in sub-diffusive systems”,
G. Gradenigo, A. Puglisi, A. Sarracino, A. Vulpiani and D. Villamaina,
Physica Scripta 86, 058516 (2012)
2. “Einstein Relation in Systems with Anomalous Diffusion”,
G. Gradenigo, A. Sarracino, D. Villamaina and A. Vulpiani,
Acta Physica Polonica B 44, 899 (2013)

3. “Scaling properties of field-induced superdiffusion in Continuous Time Random Walks”,
R. Burioni, G. Gradenigo, A. Sarracino, A. Vezzani, A. Vulpiani,
Commun. Theor. Phys. 62, 514 (2014).

BOOK CHAPTERS

- “Out-of-equilibrium generalized fluctuation-dissipation relations”,
G. Gradenigo, A. Puglisi, A. Sarracino, D. Villamaina, and A. Vulpiani,
in “Nonequilibrium Statistical Physics of Small Systems: Fluctuation Relations and Beyond” (Wiley-VCH, Weinheim, 2013) R. Klages, W. Just, C. Jarzynski (Eds.)