Research experience: Curriculum Vitae

Personal Details

Name: Dr. Kirsten Martens
Gender: Female
Date and Place of birth: August 2nd, 1979 in Husum, Germany
Present Citizenship: German
Homepage: http://www-liphy.ujf-grenoble.fr/pagesperso/martens

Career History

Since 2013	**University Grenoble Alpes, LIPhy (France)**: CNRS researcher in the group Statistical Physics and Modelling (PSM)
2012 – 2013	**University of Geneva, DPMC (Switzerland)**: Research fellow in the group of Prof. T. Giamarchi
2009 – 2012	**University Claude Bernard Lyon 1, LPMCN (France)**: Post-doctoral position (Swiss National Science Foundation, then Marie Curie) first with Prof. J.-L. Barrat, then with Prof. L. Bocquet
2005 – 2009	**University of Geneva, DPT (Switzerland)**[1]: **PhD** in Physics (**grade: very good**), supervisor: Prof. M. Droz; Thesis: *Investigation of non-equilibrium systems: Validity of generalized equilibrium concepts and control of precipitation patterns*
2004 – 2005	**University of Heidelberg (Germany)**: **Diploma** in Physics (**grade: very good**) Diploma Thesis: *Magnetic Reversal in Nanoscopic Ferromagnetic Rings*; Supervisor: Prof. H. Horner, in cooperation with Prof. D. L. Stein (**New York University**)
2003 – 2004	**University of Arizona (USA)**: Studies in physics and research project with Prof. D. L. Stein (**New York University**) and Prof. A. D. Kent (**New York University**)
2001 – 2003	**University of Heidelberg (Germany)**: Studies in physics with specialisation in mathematics and theoretical condensed matter physics
1999 – 2001	**University of Konstanz (Germany)**: Studies in physics: *Vordiplom* (intermediate diploma)

[1] standard duration for a PhD in physics at the University of Geneva

Funding, Fellowships and Awards

2018 – 2022 **Excellency award (CNRS)** (*Prime d'excellence scientifique*)

2016 – 2019 **Indo French Centre for the Promotion of Advanced Research (CEFIPRA)** (*Modeling Soft Glassy Flow from Micro to Macro Scale*)

2014 – 2019 **French National Science Foundation (ANR)** (*Failure precursors in soft matter*)

2012 – 2016 **Excellency award (CNRS)** (*Prime d'excellence scientifique*)

2012 – 2013 **Fellowship of the excellence program** of the **University of Geneva** (*boursière d'excellence*)

2010 – 2012 **Marie Curie Fellowship** at the **University Lyon 1** (FP7-PEOPLE-IEF)

2005 – 2009 **Research Funding** at the **University of Geneva** and **University Lyon 1** through the Swiss National Science Foundation

2003 – 2004 **Fellowship** for a one year visit at the **University of Arizona**, "Akademisches Auslandsamt Heidelberg"

2000 – 2005 **Elite Program** and **Scholarship** for undergraduate and master level studies at the **University of Konstanz**, the **University of Heidelberg** and the **University of Arizona**, "Evangelisches Studienwerk"

Organization of Conferences

2019 **Les Houches (France)**, International CECAM Conference, 1 week, *Avalanches in non-equilibrium phase transitions*

2017 **Lyon (France)**, International CECAM Conference, 3 days, *Rheology of gel networks: combining experimental, computational and theoretical insights*

2016 **Lyon (France)**, International CECAM Conference, 3 days, *The flow of amorphous solids: from atomistic simulations to Earth Science applications*

2015 **Grenoble (France)**, 1 day, National Meeting *Driven soft materials and collective cell mechanics*

2014 **Grenoble (France)**, 2 days, National GDR Phenix Meeting *Driven disordered systems*

2014 **Carry-Le-Rouet (France)**, 1 day, CANUM 2014 (SMAI) National Minisymposium, *Regards croisés sur les fluides complexes*

Presentations in International Conferences, Workshops and Schools

2019 **Lausanne (Switzerland)**, 1 week, Molecular and materials simulations at the turn of the decade: Celebrating 50 years of CECAM
Invited Talk: *Modelling Approaches for Soft Glassy Rheology*

2019 **Lyon (France)**, 1 week, The 17th international conference on Liquid and Amorphous Metals (LAM-17)
Invited Keynote: *Characterising residual stress states of athermally driven glasses*

2019 **Bariloche (Argentina)**, 1 week, StatPhys Satellite - Yielding phenomena in disordered systems
Invited Talk: *Transient and permanent shear localisation in yielding disordered solids*

2018 **Stockholm (Sweden)**, 1 week, Nordita workshop: Crackling Noise in Materials
Invited Talk: *Out-of-equilibrium critical phenomena in sheared yield-stress materials*
Invited Talk: *Precursors to failure in a model gel*

2018 **Sorrento (Italy)**, 1 week, Annual European Rheology Conference (AERC 2018)
Talk: *Non-linear rheology in a model biological tissue*

2018 **Santa Barbara (USA)**, 1 week, Non-linear mechanics and rheology of dense suspensions
Invited Talk: *Permanent shear band instabilities in dense yield stress materials*

2017 **Barcelona (Spain)**, 3 days, Dynamics of self-organization: from colloids to biomaterials (COST)
Invited Talk: *A soft matter approach for the non-linear rheology in a model biological tissue*

2017 **Grenoble (France)**, 3 days, French-Indian meeting on plasticity and rheology in amorphous solids, in connection with glassy dynamics
Invited Talk: *A statistical physics approach for the creep dynamics in soft matter*

2017 **Mainz (Germany)**, 3 days, Mainz Materials Simulations Days
Invited Talk: *Bridging the gap between microscopic and macroscopic descriptions for the flow of glassy materials*

2017 **Lugano (Switzerland)**, 3 days, International CECAM conference on Challenges in crystal plasticity: from discrete dislocations to continuum models
Invited Talk: *Mesoscopic approaches for the yielding transition of amorphous materials*

2017 **Lyon (France)**, 3 days, MECO 42, 42nd conference of the Middle-European Cooperation in Statistical Physics
Talk: *A statistical physics approach for the flow transition of yield stress fluids*

2017 **Barcelona (Spain)**, 4 days, Avalanche Processes in Condensed Matter Physics and Beyond
Invited Talk: *Avalanche Statistics and Shapes at the Yielding Transition*

2016 **Lausanne (Switzerland)**, 3 days, International CECAM conference on Biomimetic and living materials: active matter at high densities
Talk: *Non-linear mechanical response of biological tissues under shear*

2016 **Dijon (France)**, 1 week, 8th Multiscale Materials Modeling (MMM) international conference
Invited Talk: *Mesoscopic Modeling - Specific Ingredients and Emergent Behaviors*

2016 **Oxford (UK)**, 3 days, Hysteresis, Avalanches and Interfaces in Solid Phase Transformations
Invited Talk: *Driving Rate Dependence of Avalanche Statistics and Shapes at the Yielding Transition*

2016 **Lyon (France)**, 1 week, StatPhys26
Talk: *A Statistical Physics Approach for the Creep Dynamics in Soft Matter*

2016 **Aussois (France)**, 3 days, StatPhys26 satellite meeting Statistical Physics of Materials
Invited Talk: *Statistical physics of the yielding transition in soft matter*

2015 **Mainz (Germany)**, 3 days, Women in Applied Maths & Soft Matter Physics
Invited Talk: *Temperature concepts and out of equilibrium phase transitions in externally driven yield stress materials*

2015 **Souzhou (China)**, 1 week, Physics of Active Matter
Talk: *Mean field descriptions for the rheology of tissues*

2015 **Bangalore (India)**, 3 days, ICTS-TIFR Workshop on the nonlinear physics of disordered systems associated Chandrasekhar Lectures (Itamar Procaccia)
Invited Talk: *Statistical physics of athermally sheared amorphous systems*

2014 **Santa Barbara (USA)**, 1 week, KITP Conference: Complexity in mechanics: Intermittency and collective phenomena in disordered solids
Invited Talk: *Nonlinear response of sheared amorphous systems: mechanical vs thermal yielding*

2014 **Cambridge (UK)**, 4 days, Avalanches in Functional Materials and Geophysics
Invited Talk: *Are athermal amorphous materials under deformation effectively thermal?*

2013 **Leipzig (Germany)**, 3 days, Graduate School (BuildMoNa)
Invited Lecture: *Observable dependence of fluctuation-dissipation temperatures*

2013 **Goettingen (Germany)**, 3 days, Barkhausen Symposium
Invited Talk: *Mesoscopic modeling of the flow of disordered media*

2012 **Isola del Giglio (Italy)**, 1 week, Workshop on Non-equilibrium fluctuation-response relations
Invited Talk: *Entropy-based characterizations of the observable-dependence of the fluctuation-dissipation temperature*

2012 **Boston (USA)**, 1 week, APS - March Meeting
Talk: *Spontaneous formation of permanent shear bands in a mesoscopic model of flowing disordered matter*

2012 **Les Houches (France)**, 1 week, Workshop on Materials Deformation: Fluctuations, Scaling, Predictability
Talk: *Heterogeneous flow of disordered matter*

2011 **Vienna (Austria)**, 1 week, 8th Liquid Matter Conference
Poster Contribution: *A mesoscopic model for the flow of amorphous media*

2011 **Dublin (Ireland)**, 1 week, CECAM Workshop on MultiScale Modelling of Amorphous Materials: From Structure to Mechanical Properties.
Poster Contribution: *Connecting Diffusion and Dynamical Heterogeneities in Actively Deformed Amorphous Systems*

2009 **Dresden (Germany)**, 1 week, Workshop on Many-body systems far from equilibrium: Fluctuations, slow dynamics and long-range interactions
Talk: *The generalisation of equilibrium concepts*

2008 **Kolympari-Chania Crete (Greece)**, 1 week, Sigma Phi Conference
Talk: *Encoding Information into Precipitation Patterns*

2007 **Genova (Italy)**, 1 week, Statphys 23
Talk: *Intensive Thermodynamic Parameters in Non-Equilibrium Systems*
Poster Contribution: *Guiding-Fields for Phase-Separation: Controlling Liesegang patterns*

Invited Seminars

2017 **Paris (France)**, Seminar of the PMMH lab at the ESPCI
Title: *Fluidization of yield stress materials through active and activated local events*
Invited by Sylvain Patinet

2016 **Göttingen (Germany)**, Seminar of the physics institut at the University of Göttingen
Title: *Temperature concepts and out of equilibrium phase transitions in externally driven yield stress materials*
Invited by Konrad Samwer

2016 **Düsseldorf (Germany)**, Seminar of the physics institut at the University of Düsseldorf
Title: *Temperature concepts and out of equilibrium phase transitions in externally driven yield stress materials*
Invited by Jürgen Horbach

2016 **Paris (France)**, Seminar of the Gulliver lab at the ESPCI
Title: *Mesoscopic Modeling - Specific Ingredients and Emergent Behaviors*
Invited by Vincent Démery

2015 **Washington DC (USA)**,
Title: *Dynamical phase transitions in athermally sheared disordered systems*
Invited by Emanuela Del Gado

2015 **Rennes (France)**, Institut de Physique de Rennes
Title: *Temperature concepts and out of equilibrium phase transitions in externally driven yield stress materials*
Invited by Axelle Amon

2015 **Xi'an (China)**,
Title: *Dynamical phase transitions in athermally sheared disordered systems*
Invited by Xiangdong Ding

2015 **Chennai (India)**,
Title: *Dynamical phase transitions in athermally sheared disordered systems*
Invited by Pinaki Chaudhuri

2012 **Budapest (Hungary)**, Seminar of the Physics Institute, Eötvös University
Title: *Nonlinear wavelength selection in surface facetting under electromigration*
Invited by Zoltán Rácz

2011 **Paris (France)**, Seminar of the MSC, Université Paris Diderot
Title: *Heterogeneous flow in disordered media, a mesoscopic approach*
Invited by Frédéric van Wijland

2011 **Grenoble (France)**, Seminar, group MODEM, LIPhy, Université Grenoble 1
Title: *Different physical origins of shear banding*
Invited by Jean-Louis Barrat

2011 **Montpellier (France)**, Seminar of the Laboratoire Charles Coulomb, Université Montpellier 2
Title: *Spontaneous formation of permanent shear bands in a mesoscopic model of flowing disordered matter*
Invited by Ludovic Berthier

2011 **Marseille (France)**, Seminar of the CPT, Université de Provence
Title: *The use of intensive thermodynamic parameters in non-equilibrium steady state systems*
Invited by Alain Barrat

2011 **Annecy (France)**, Seminar of the Math Institute LAMA, Université de Savoie
Title: *A mesoscopic model of sheared disordered media*
Invited by Didier Bresch

2011 **Lyon (France)**, Seminar of the physics laboratory, ENS Lyon
Title: *Connecting diffusion and dynamical heterogeneities in actively deformed amorphous systems*
Invited by Jean-Christophe Géminard

2011 **Paris (France)**, Seminar of the laboratory LPS, ENS Paris
Title: *The impact of heterogeneities on diffusion in sheared disordered media*
Invited by Martine Ben Amar

2010 **Grenoble (France)**, Seminar of the laboratory LIPHY, Université Grenoble 1
Title: *The impact of heterogeneities on diffusion in sheared disordered media*
Invited by Chaouqi Misbah

2010 **Budapest (Hungary)**, Seminar of the Physics Institute, Eötvös University
Title: *Dependence of the Fluctuation-Dissipation Temperature on the Choice of Observable*
Invited by Zoltán Rácz

2010 **Lyon (France)**, Seminar of the Physics Institute of the ENS Lyon
Title: *Entropy-based characterizations of the observable-dependence of the fluctuation-dissipation temperature*
Invited by Thierry Dauxois

2010 **Paris (France)**, Joined seminar of the Laboratoire de Physique Théorique et Modèles Statistiques (LPTMS) and the Laboratoire de Physique Théorique (LPT)
Title: *Dependence of the Fluctuation-Dissipation Temperature on the Choice of Observable*
Invited by Emmanuel Trizac

2008 **Lyon (France)**, Seminar of the Laboratoire de Physique de la Matière Condensée et Nanostructures
Title: *Advances in Pattern design: Methods to Control Precipitation Structures*
Invited by Jean-Louis Barrat

2008 **Barcelona (Spain)**, Theoretical physics seminar, University of Barcelona
Title: *Designing Patterns: Flexible Control of Precipitation through Electric Currents*
Invited by Pau Formosa Jordan

Participation in International Conferences, Programs and Workshops

2018 **Santa Barbara (USA)**, 3 weeks at the KITP,
Workshop "Physics of Dense Suspensions"

2015 **Montpellier (France)**, 1 week,
International Workshop on Dynamics in Viscous Liquids

2014 **Santa Barbara (USA)**, 3 weeks at the KITP,
Workshop "Active Matter: Cytoskeleton, Cells, Tissues and Flocks"

2013 **Dresden (Germany)**, 3 weeks at the Max Planck Institute for Complex Systems,
Workshop on Active Matter, invited by Hugues Chaté

2012 **Dresden (Germany)**, 2 weeks at the Max Planck Institute for Complex Systems,
Workshop on Active Matter, invited by Hugues Chaté

2011 **Dresden (Germany)**, 4 weeks at the Max Planck Institute for Complex Systems,
Workshop on Active Matter, invited by Hugues Chaté

2011 **Lyon (France)**, 2 days at the IXXI (Institut of Complex Systems),
Workshop on Social Networks, organized by Pablo Jensen

2010 **Paris (France)**, 2 days at the ESPCI,
Workshop "Fluctuations, information flow and experimental measurements"

2010 **Santa Barbara (USA)**, 3 weeks at the KITP,
Workshop "The Physics of Glasses: Relating Metallic Glasses to Molecular, Polymeric and Oxide Glasses"

2010 **Les Houches (France)**, 1 week,
Workshop "Physics of Amorphous Solids: Mechanical Properties and Plasticity"

2010 **Paris (France)**, 2 days at the IHP,
Workshop "Open questions on glasses and glassforming systems"

2008 **Barcelona (Spain)**, 2 days,
Workshop "Temperature in Non-Equilibrium systems"

2007 **Paris (France)**, 1 week,
A trimester on Statistical Physics Out-of-Equilibrium at the Institut Henry Poincaré

2006 **Geneva (Switzerland)**, 1 week,
Conference on Lattice Boltzmann simulations

2006 **Sils Maria (Switzerland)**, 1 week,
Conference on Liesegang Pattern Formation

2005 **Austin, Texas (USA)**, 1 week,
SPIE's Third International Symposium on Fluctuations and Noise (FaN'05)

Presentations and participation in National Conferences

2017 **Orsay (France)**, 1 day,
Complex system and matter day - "Journée Systèmes & Matière Complexes" at the ENS Paris-Saclay
Invited talk: *Flow instabilities in yield stress fluids*

2015 **Paris (France)**, 2 days,
Statistical physics days - "Journées de Physique Statistique" at the ESPCI
Invited talk: *Statistical physics of sheared yield stress materials*

2015 **Lyon (France)**, 2 days, GDR meeting on Active Fluids

2013 **Grenoble (France)**, 2 days GDR meeting, Moving without Muscles (walkers, jumpers, plants)

2012 **Montpellier (France)**, 1 week, Condensed Matter reunion of the French Physical Society (JMC13)
Poster: *Athermal noise in actively deformed amorphous systems*

2011 **Paris (France)**, 2 days, reunion of the research groups GDR PHENIX and GDR MEPHY at the ESPCI
Talk: *Connecting Diffusion and Dynamical Heterogeneities in Actively Deformed Amorphous Systems*

2010 **Paris (France)**, 2 days, reunion of the research group GDR PHENIX at the Institut Henri Poincaré
Talk: *A mesoscopic model to describe heterogeneities in amorphous media*

2008 **Geneva (Switzerland)**, 2 days, Swiss Physical Society Annual Meeting
Talk: *Designer Patterns: Flexible Control of Precipitation through Electric Currents*

Schools

2014 **Beg Rohu (France)**, 2 weeks, Summer School
Nonequilibrium Statistical Mechanics and Active Matter

2011 **ENS Paris (France)**, 2 days
4th European meeting on Python in Science

2011 **Les Houches (France)**, 2 weeks, CECAM
First Les Houches School in Computational Physics - Soft Matter

2011 **Stuttgart (Germany)**, 2 days, HLRS
CUDA course: General-Purpose GPU programming

2008 **Beg Rohu (France)**, 2 weeks, Summer School
Manifolds in Random Media, Random Matrices and Extreme Value Statistics
Talk: *Out of Equilibrium systems: Concepts and Control*

2007 **Turin (Italy)**, 1 week, Seminaire Transalpin
Graduate School on Dynamics and Statistics in Complex Systems
Poster Contribution: *The Use of Intensive Thermodynamic Parameters (ITPs) in Non-Equilibrium Systems*

2006 **Peyresq (France)**, 1 week, Summer School on Nonlinear Physics
Talk: *The Generalisation of Intensive Thermodynamic Parameters to Non-Equilibrium Steady States*

2006 **Champex (Switzerland)**, 1 week, Seminaire Transalpin
Graduate school on Non-equilibrium Statistical Mechanics

Teaching

2017-2020 Supervision of a PhD student, Magali Le Goff, 3 years

2017 Invited lecture in an advanced school (6h) on "Flowing matter",
CISM Udine, COST Action (1 week)

2017 Supervision of a master level student, Magali Le Goff (M2), 6 months
A mesoscopic approach for the rheology of vibrated granular matter

2013 – 2016 Co-supervision of a PhD student with Prof. Jean-Louis Barrat, Chen Liu
Critical dynamics at the yielding transition and creep behavior of amorphous systems - mesoscopic modeling

2016 Co-supervision of German master student with Prof. Jean Louis Barrat and Francesco Puosi, Lawrence Smith, 4 months
Microscopic investigation of mechanical noise in the flow of amorphous matter

2014 Supervision of a master level student, F. Bey (M1), 3 months
Extensive simulations of coarse grained 2d crystal surface dynamics under applied external currents

2011	Supervision of a master level student, F. Barakat (M1), 4 months *The impact of externally imposed current on the pattern formation on crystal surfaces*
2009 – 2010	Lecturing "Science et Danse" (28 h) Third year University course at the ENS Lyon on vulgarisation of scientific results together with the dance company Hallet Eghayan in Lyon
2009	Lecturing of master level course on pattern formation (2 h) Master of Complex Systems at the ENS Lyon
2005 – 2009	Teaching assistance in several undergraduate and graduate level courses at the **University of Geneva** and the **EPFL Lausanne** in mathematical methods, statistical mechanics, stochastic phenomena and renormalisation group methods; coordination of the homework problems, tutoring, and student evaluation (196 h)
2007 – 2008	Lecturing of master level courses in non-equilibrium statistical physics (6 h)

Language Knowledge

German native, **English** fluent, **French** fluent, **Spanish** basic

Programming languages: C/C++ and CUDA

Administrative, editorial and social Responsibilities

	Referee for PRL, PRE, Soft Matter, EPL, Scientific Reports, JOR, Frontiers in Physics, Referee for ANR
since 2020	**Physical Review Letters**: Divisional Assistant Editor (DAE)
since 2019	**Communications Physics**: External editor
2016 – 2020	**University Grenoble Alpes**: Member of the administrative council
2008 – 2009	**University of Geneva**: Mentor program *Mentorat Relève académique* with Prof. Marie Besse. Participation in workshops and reunions to promote and encourage women with potential for an academic career.
2004 – 2005	**Heidelberg**: Member of AEGEE (Association des Etats Généraux des Etudiants de l'Europe), organisation of cultural and sport events for Erasmus students in Heidelberg
2004 – 2005	**Heidelberg**: President of the local group of the "Evangelisches Studienwerk", organisation of meetings and interdisciplinary seminars
1999 – 2001	**University of Konstanz**: Representation of the students in the academic council of the science department

PUBLICATION LIST RESEARCHER ID: B-8407-2008

A) Articles in refereed journals

33. L. Cipelletti, K. Martens and L. Ramos, *Microscopic precursors of failure in soft matter*, Soft Matter 15th Anniversary Perspectives (2019).

32. M. Le Goff, E. Bertin and K. Martens, *Criticality at finite strain rate in fluidized soft glassy materials*, Phys. Rev. Lett. (2019).

31. V. Petrolli, M. Le Goff, M. Tadrous, K. Martens, C. Allier, O. Mandula, L. Herv, S. Henkes, R. Sknepnek, T. Boudou, G. Cappello and M. Balland, *Confinement-induced transition between wave-like collective cell migration modes*, Phys. Rev. Lett. **122**, 168101 (2019).

30. R. Cabriolu, J. Horbach, P. Chaudhuri and K. Martens, *Precursors of fluidisation in the creep response of yield stress materials*, Soft Matter **15**, 415 (2019).

29. C. Liu, E. E. Ferrero, K. Martens and J.-L. Barrat, *Creep dynamics of athermal amorphous materials: a mesoscopic approach*, Soft Matter **14**, 8306 (2018).

28. A. Nicolas, E. E. Ferrero, K. Martens and J.-L. Barrat, *Deformation and flow of amorphous solids: a review of mesoscale elastoplastic models*, Rev. Mod. Phys. **90**, 045006 (2018).

27. A. E. Lagogianni, C. Liu, K. Martens and K. Samwer, *Plastic avalanches in the so-called elastic regime of metallic glasses*, Eur. Phys. J. B, **91**, 104 (2018).

26. C. Liu, K. Martens and J.-L. Barrat, *Mean-field scenario for the athermal creep dynamics of yield stress fluids*, Phys. Rev. Lett. **120**, 028004 (2018).

25. E. Agoritsas and K. Martens, *Nontrivial rheological exponents in sheared yield stress fluids*, Soft Matter **13**, 4653 (2017).

24. D. A. Matoz-Fernandez, E. Agoritsas, J.-L. Barrat, E. Bertin and K. Martens, *Non-linear rheology in a model biological tissue*, Phys. Rev. Lett. **118**, 158105 (2017).

23. D. A. Matoz-Fernandez, K. Martens, R. Sknepnek, J.-L. Barrat and S. Henkes, *Cell division and death inhibit glassy behaviour of confluent tissues*, Soft Matter **13**, 3205 (2017).

22. C. Liu, E. E. Ferrero, F. Puosi, J.-L. Barrat and K. Martens, *Driving rate dependence of avalanche statistics and shapes at the yielding transition*, Phys. Rev. Lett. **116**, 065501 (2016).

21. F. Puosi, J. Olivier and K. Martens, *Quantitative assessment of mean-field modeling for athermally sheared yield stress materials*, Soft Matter **11**, 7639 (2015).

20. E. Agoritsas, E. Bertin, K. Martens and J.-L. Barrat, *On the relevance of disorder in athermal amorphous materials under shear*, Eur. Phys. J. E, **38**, 71 (2015).

19. L. Marradi, D. Dellis and K. Martens *Large scale parallelized 3d mesoscopic simulations of the mechanical response to shear in disordered media*, PRACE White Paper (2015).

18. E. Ferrero, K. Martens and J.-L. Barrat, *Relaxation in yield stress systems through elastically interacting activated events*, Phys. Rev. Lett. **113**, 248301 (2014).

17. A. Nicolas, K. Martens and J.-L. Barrat, *Rheology of athermal solids: Revisiting simplified scenarios and the concept of mechanical noise temperature* , EPL **107**, 44003 (2014).

16. A. Nicolas, K. Martens, L. Bocquet and J.-L. Barrat, *Universal and non-universal features in coarse-grained models of flow in disordered solids*, Soft Matter, **10**, 4648 (2014).

15. B. Ziegler, K. Martens, T. Giamarchi and P. Paruch, *Domain wall roughness in stripe phase $BiFeO_3$ thin films*, Phys. Rev. Lett. **111**, 247604 (2013).

14. K. Martens, L. Angelani, R. Di Leonardo, and L. Bocquet, *Probability distributions for the run-and-tumble bacterial dynamics: An analogy to the Lorentz model*, Eur. Phys. J. E **35**, 84 (2012).

13. F. Barakat, K. Martens, and O. Pierre-Louis, *Nonlinear wavelength selection in surface facetting under electromigration*, Phys. Rev. Lett. **109**, 056101 (2012).

12. K. Martens, L. Bocquet, and J.-L. Barrat, *Spontaneous formation of permanent shear bands in flowing disordered media*, Soft Matter **8**, 4197 (2012).

11. K. Martens and E. Bertin, *Influence of flux balance on the generalized chemical potential in mass transport models*, J. Stat. Mech. P09012 (2011).

10. K. Martens, L. Bocquet, J.-L. Barrat, *Connecting diffusion and dynamical heterogeneities in actively deformed amorphous systems*, Phys. Rev. Lett. **106**, 156001 (2011).

9. K. Martens, E. Bertin, and M. Droz, *Entropy-based characterizations of the observable dependence of the fluctuation-dissipation temperature*, Phys. Rev. E **81**, 061107 (2010).

8. K. Martens, E. Bertin, and M. Droz, *Observable dependence of the fluctuation-dissipation temperature*, Phys. Rev. Lett. **103**, 260602 (2009).

7. K. Martens, M. Droz, and Z. Rácz, *Width of reaction zones in $A + B \to C$ type reaction-diffusion processes: Effects of an electric field*, J. Chem. Phys. **130**, 234506 (2009).

6. K. Martens, I. Bena, M. Droz, and Z. Rácz, *Encoding information into precipitation structures*, J. Stat. Mech., P12003 (2008).

5. I. Bena, M. Droz, I. Lagzi, K. Martens, Z. Rácz, and A. Volford, *Designed patterns: Flexible control of precipitation through electric currents*, Phys. Rev. Lett. **101**, 075701 (2008).

4. T. Antal, I. Bena, M. Droz, K. Martens, and Z. Rácz, *Guiding-fields for phase-separation: Controlling Liesegang patterns*, Phys. Rev. E **76**, 046203 (2007).

3. E. Bertin, K. Martens, O. Dauchot, and M. Droz, *Intensive thermodynamic parameters in nonequilibrium systems*, Phys. Rev. E **75**, 031120 (2007).

2. I. Bena, M. Droz, K. Martens, and Z. Rácz, *Reaction-diffusion fronts with inhomogeneous initial conditions*, J. Phys.: Condens. Matter **19**, 065103 (2007).

1. K. Martens, D. L. Stein, and A. D. Kent, *Magnetic Reversal in Nanoscopic Ferromagnetic Rings*, Phys. Rev. B **73**, 054413 (2006).

B) Submitted articles

1. M. Le Goff, E. Bertin and K. Martens, *Giant fluctuations in the flow of fluidised soft glassy materials: an elasto-plastic modelling approach* , invited contribution in JPhys Materials (2020).

2. V. V. Vasisht, M. Le Goff, K. Martens and J.-L. Barrat, *Permanent shear localization in dense disordered materials due to microscopic inertia*, submitted to Soft Matter (2019), arXiv:1812.03048.

C) Conference proceedings

1. K. Martens, D. L. Stein, and A. D. Kent, *Thermally Induced Magnetic Switching in Thin Ferromagnetic Annuli*, in Noise in Complex Systems and Stochastic Dynamics III, L. B. Kish, K. Lindenberg, and Z. Gingl, SPIE Proceedings Series, v. **5845** pp.1–11 (2005).

D) Book chapters

1. E. Del Gado, K. Martens, R. J. M. Pellenq, *From microscopic insight to constitutive models: bridging length scales in soft and hard materials*, 1-19, Handbook of Materials Modeling: Applications: Current and Emerging Materials (2019).

E) Theses

2. K. Martens, *Investigation of non-equilibrium systems: Validity of generalised equilibrium concepts and control of precipitation patterns*, PhD thesis, Geneva (2009).

1. K. Martens, *Magnetisierungsumkehr in dünnen ferromagnetischen Ringen*[2], Diploma thesis[3] (Diplomarbeit), Heidelberg (2005).

[2]Translation: Magnetisation reversal in thin ferromagnetic rings
[3]Diploma thesis: one year full time research project