

Decreto Rettore Università di Roma “La Sapienza” n 796/2023 del 04/04/2023

Matteo Paoluzzi Curriculum Vitae

Rome
24/09/2023

Part I – General Information

Full Name	Matteo Paoluzzi
Citizenship	Italian
Spoken Languages	Italian, English

Part II – Education

Type	Year	Institution	Notes
University graduation	2008	Sapienza	Cum laude
PhD	2012	Roma Tre	

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
2011	2014	IPCF-CNR, UOS Rome@Sapienza, Italy	Postdoc
2014	2015	Sapienza, Physics Department, Rome, Italy	Borsa di studio
2015	2018	Syracuse University, Physics Department, Syracuse, USA	Postdoc
2018	2019	Sapienza, Physics Department, Rome, Italy	Postdoc
2019	2020	ISC-CNR, UOS Rome@Sapienza, Italy	CNR-RTD
2020	2023	University of Barcelona, Physics Department, Spain	BP Fellowship
2023	---	IAC-CNR, UOS Naples, Italy	CNR-RTD

Part IV – Teaching experience

Year	Institution	Lecture/Course
2011	Roma Tre	Tutoring Activity (50 hours), “Fisica Generale 1”
2020	University of Barcelona	“Lab of Physics of Continuous Media” “Lab of Biomechanics”
2021	University of Barcelona	“Lab of Physics of Continuous Media” “Lab of Biomechanics”

Part V - Society memberships, Awards, Honors, and National Scientific Habilitation

Year	Title
2015	American Physics Society Membership
2016	American Physical Society Membership
2017	American Physical Society Membership
2018	American Physical Society Membership
2019	American Physical Society Membership
2019	Società Italiana di Fisica Statistica Membership

2020	Società Italiana di Fisica Statistica Membership
2020	Beatriu de Pinós Fellowship
2021	American Physical Society Membership
2021	Società Italiana di Fisica Statistica Membership
2021	National Scientific Habilitation, 02/A2: “Theoretical Physics of Fundamental Interactions” (Associate Professor, 2021/2030)
2021	National Scientific Habilitation, 02/B2: “Theoretical Physics of Condensed Matter” (Associate Professor, 2021/2030)
2021	National Scientific Habilitation, 01/B4: “Mathematical Physics” (Associate Professor, 2021/2030)

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2020	Pattern Formation and Collective Behavior in Living Matter	Beatriu de Pinós (2018, BP 00088), cofund MCSA No. 801370. Excellence: 9.54	144300 euro

Part VII – Research Activities

Keywords	Brief Description
Active Matter, Soft Matter, Statistical Mechanics, Complex Systems, Collective Behavior, Disordered Systems, Non-equilibrium	<p>I am interested in both, fundamental problems in Soft and Condensed Matter Theory, and fundamental and applied problems in Active and Living Materials. In Condensed Matter Theory, my research activity is focused on structural glasses and related complex phenomena in disordered media. In Soft and Active Matter, my focus is on collective behaviors in collections of autonomous agents. My active collaborations involve three continents (Barcelona, Paris, and Rome in Europe, Fullerton and Santa Barbara in United states of America, Hyderabad and Singapore in Asia) most of them within the research project Pattern Formation and Collective Behavior in Living Matter.</p> <p>2020– Pattern Formation and Collective Behavior in Living Matter.</p> <p>The research project Pattern Formation in Living Materials (POLIMA) develops a systematic study of structural and dynamical properties of Living Materials with the final purpose of revealing their universal features and controlling collective behaviours. POLIMA pursuets the following goals: (i) to catalog the dynamic patterns in dense active materials, (ii) to develop an effective equilibrium picture for describing the morphological and structural properties of active media, (iii) to control pattern formation in Living Material designing opportune synthetic environment. In particular, within the project, new theoretical and numerical tools suitable for understanding collective behaviour in living materials will be developed. The major accomplishments expected are: (a) Understanding the structural and dynamical properties of the Motility-Induced Phase separation phase in connection with gas/liquid phase coexistence in equilibrium systems. We will quantify the properties of dense active materials devoting particular attention to the formation of glassy states because they might have biological relevance. (b) Exploring the effect of feedback between cell shape and cell motion in dense biological tissues. Since there is strong experimental</p>

	<p>evidence of a correlation between single-cell shape and single-cell displacement, we will explore the effect of this feedback in models of biological tissues. We will identify the microscopic mechanisms leading to collective cell migration. (c) Designing of micro-gear driven by cell colonies. Taking advantage of the non-equilibrium nature of living materials, and designing a suitable synthetic environment, we will explore the efficiency of different ratchet machinery.</p> <p>2019– 2020. Numerical Models of human sperm, <i>Designing microfluidic devices of human sperm sorting</i>. Numerical models of spermatozoa in microfluidic devices.</p> <p>2015–Ongoing. Structural glasses, <i>Low-frequency spectrum in three dimensional glass formers. Deviation from Debye’s law</i>. Newtonian and Brownian Molecular dynamics simulations, Swap Monte Carlo simulations, Inherent structures, density of states of glassy materials.</p> <p>2015–Ongoing. Modeling of Biological Tissues. <i>Epithelial cells migration in confluent monolayers</i>. Voronoi models of biological tissues, flocking transition in confluent monolayer, anomalous glassy dynamics in simple model of biological tissues.</p> <p>2011-2015. Modeling of E. coli bacteria baths, <i>Swimming organisms at low Reynolds number under strong confinement and in crowded environments</i>. Molecular dynamics simulations of elongated active particles confined and in external random fields.</p> <p>2008-2012. Spin glasses and secondary processes, <i>Inverse transitions in a three dimensional spin glass, schematic mode-coupling theories for secondary processes in glasses</i>. Parallel tempering Monte Carlo simulations of a three dimensional spin glass, numerical solutions of schematic mode- coupling theory, p + s spherical spin glass models.</p>
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Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	42	scholar	2010	2023
Contributed Talk	13			
Invited Talk	6			
Poster Sessions	14			
Conferences	30			
Referee Activity	Nature Communications, Nature Communications Physics, Nature Scientific Reports, Physical Review Letters, Physical Review E, Soft Matter, Journal of Chemical Physics, The European Physical Journal E, Entropy, Physics Letters A, Chinese Physics B, Advanced Theory and Simulations, PNAS, SciPost, Physical Review Fluids, New Journal of Chemistry, Physical Chemistry Chemical Physics, Journal of Statistical Physics, Italian Ministry of University and Research (PRIN and Rita Levi Montalcini program), Israel Science Foundation (Personal Research Grants).			

Editorial Board	Associate Editor in Soft Matter Physics (Frontiers in Physics).
Conferences Organization	Symposium Leader of “Collective Behavior in Biological Tissue” 9IDMRCS (12-18 August 2023, https://9idmracs.jp/)

Total Impact factor	196.6 (scholar)
Total Citations	1288 (scholar), 931 (WOS)
Average Citations per Product	30.7 (scholar), 22.2 (WOS)
Hirsch (H) index	20 (scholar), 18 (WOS)
Normalized H index*	1.8 (scholar), 1.6 (WOS)

*H index divided by the academic seniority.

Contributed Presentations

1. *XII International Workshop on Complex Systems*, (15-18/03/'10) Andalo-Italy. Title: *Thermodynamic first order transition and inverse freezing in a 3D spin-glass*.
2. *XV Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi*, (21-23/06/'10) Parma-Italy. Title: *Inverse Transition in a spinglass*.
3. *Workshop SOFT 2011*, (25-27/02/'11) Parma-Italy. Title: *Dynamic of the secondary processes in a mean-field exactly solvable model glass*.
4. *International Conference on Statistical Physics*, (11-15/07/'11) Larnaca-Cyprus. Title: *Dynamic and Thermodynamic properties underlying secondary processes in a mean-field exactly solvable model glass*.
5. *XX Convegno Nazionale di Fisica Statistica*, (29/06/'15-01/07/'15), Parma-Italy. Title: *Active Matter In Confining Geometries*.
6. *APS March Meeting*, (14-18/03/'16), Baltimore, U.S.A. Title: *Critical Phenomena in Active Matter*.
7. *APS March Meeting*, (13-17/03/'17), New Orleans, U. S. A. Title: *Flocking transition in confluent tissues*.
8. *APS March Meeting*, (5-9/03/'18), Los Angeles, U. S. A. Title: *Anomalous glassy dynamics in simple models of biological tissue*.
9. *Italian Soft days 2018*. Title: *Anomalous glassy dynamics in simple models of biological tissue*.
10. *2019 International Workshop on Glass Physics in Beijing*, 25-28/09/2019, Beijing, China. Title: *The non-Debye spectrum in structural glasses and supercooled liquids*.
11. *Grand Views of Soft and Liquid Matter Physics*, (2020, Japan, canceled) Title: *The non-Debye spectrum in structural glasses and supercooled liquids*.
12. *APS March Meeting*, (2020, U.S.A., canceled) Title: *Information and motility exchange in collectives of active particles*.
13. *Active Motile Matter 2020*, (26-29/10/2020) Title: *Information and motility exchange in collectives of active particles*.

Invited Talks and Invited Visiting

1. Okinawa Institute of Science and Technology, Okinawa, Japan (19-21/01/2015). Title: *Active Matter In Confining Geometries*.

2. Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany (11/04/2018). Title: *Pattern Formation and Effective Equilibrium Theories in Active Matter*.
3. University of California Fullerton, California USA (31/07/2019-7/08/2019).
4. University of Barcelona, Spain, (28/2/2020). Title: *Collective cell migration and glassy dynamics in simple models of biological tissue*.
5. SISSA, Trieste, Italy (3-6/03/2020). Title: *Collective cell migration and glassy dynamics in simple models of biological tissue*.
6. Recent advances on the glass problem, CECAM-EPFL, Switzerland (5-7/01/2022). Title: *From amorphous solid to Motility-Induced Phase Separation in a two dimensional model of glass*.
7. Active Stochastic models and field theory – the Rome scene, Sapienza University of Rome, Italy (21/02/2022). Title: *Entropy production in colored noise field theory*.
8. SISS, Trieste, Italy (15/09/2023). Title: *Collective Behavior in Dense and Disordered Active Matter*.

Poster Sessions

1. *Fundamental Problems in Statistical Physics XII*, (31/08/'09-11/09/'09) Leuven, Belgium.
2. *Complex Phenomena in Nonlinear Physics*, (3-7/10/'09) Erice, Italy.
3. *Nano- and Micro- Mechanics of Living Cell Adhesion*, (14-18/06/'10) Udine, Italy.
4. *Workshop on Dynamics in Viscous Liquids II*, Accademia Nazionale dei Lincei, (30/03-2/04/'11) Rome, Italy.
5. *4th Warsaw School of Statistical Physics*, (25/06-2/07/'11) Kazimierz Dolny, Poland.
6. *IPCF General Meeting*, (21-23/05/'12) Cetraro, Italy.
7. *International Soft Matter Conference*, (15-19/09/'13), Rome, Italy.
8. *Italian Soft Days*, (17-18/09/'14), Rome, Italy.
9. *XIX Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi*, 25-27/06/2014, Parma, Italy.
10. *Active and Smart Matter: A New Frontier for Science and Engineering*, (20-23/06/2016), Syracuse, U.S.A.
11. *2017 Conference on Theory & Biology*, (07/05/2017), Simons Foundation, New York, U.S.A.
12. *Soft Matter in and out of Equilibrium*, (13-18/08/2017), Gordon Research Conference, New London, U.S.A.
13. *XV International Workshop on Complex Systems* (15-20/03/2019), Andalo, Italy.
14. *XXIV Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi*, 24-26/06/2019, Parma, Italy.

Collaboration within National and International Research Projects

1. 2011-2015, IPCF-CNR and Sapienza (Rome) Projects: funded from the European Research Council under the European Union's Seventh Framework Programme (FP7/ 2007-2013)/ERC Grant Agreement No. 307940 and from the Italian Ministry of Education, University and Research (MIUR) under the Basic Research Investment Fund program (FIRB Grant No. RBF08WDBE).

PI of the projects: Prof. R. Di Leonardo.

2. 2015-2018, Soft and Living Matter program at Syracuse University. Project: funded from Simons Foundation Targeted Grant in the Mathematical Modeling of Living Systems 342354 and the Syracuse Soft and Living Matter program.

PI of the project: Prof. M. C. Marchetti

3. 2018-2019, Chimera Group at Sapienza (Rome). Project: Adinmat Joint Laboratory on “Advanced and Innovative Materials,” ADINMAT, WIS–Sapienza.

PI of the project: Prof. G. Parisi.

4. 2019-2020, ISC-CNR and Sapienza (Rome). Project: funded from Lazioinnova, Regione Lazio, Grant No. 85-2017-15257 (“Progetti di Gruppi di Ricerca–Legge 13/2008–art. 4”).

PI of the project: Dott. A. Puglisi.

5. 2020- Project: funded by the Agency for Management of University and Research Grants of Catalunya, co-fund EU-MC.

PI of the project: Dott. M. Paoluzzi, Supervisor: Prof. I. Pagonabarraga.

Part IX– Selected Publications

1. M. Paoluzzi, D. Levis, I. Pagonabarraga, *Communications Physics* 5, 111 (2022). *From motility-induced phase separation to glassiness in dense active matter.*
2. M. Paoluzzi, *Physical Review E* 105, 044139 (2022). *Scaling of the entropy production rate in a ϕ^4 model of active matter.*
3. C. Maggi, N. Gnan, M. Paoluzzi, E. Zaccarelli, A. Crisanti, *Communications Physics* 5, 55 (2022). *Critical active dynamics is captured by a colored-noise field theory.*
4. M. Paoluzzi, L. Angelani, G. Gosti, M.C. Marchetti, I. Pagonabarraga, G. Ruocco, *Physical Review E* 104, 044606 (2021). *Alignment interactions drive structural transitions in biological tissues.*
5. C. Maggi, M. Paoluzzi, A. Crisanti, E. Zaccarelli, and N. Gnan, *Soft Matter* (2021). *Universality class of the motility-induced critical point in large scale off-lattice simulations of active particles*
6. N. Pellicciotta, M. Paoluzzi, D. Buonomo, G. Frangipane, L. Angelani, and R. DiLeonardo, *Nature Communications* 14 (1), 4191 (2023). *Colloidal Transport by light induced gradients of active pressure.*
7. M. Paoluzzi, C. Maggi, and A. Crisanti, *Physical Review Research* 2 (2), 023207 (2020). *Statistical Field Theory and Effective Action Method for scalar Active Matter.*
8. M. Paoluzzi, L. Angelani, G. Parisi, and G. Ruocco, *Physical Review Research* 2, 043248 (2020). *Probing the Debye spectrum in glasses using small system sizes*
9. M. Paoluzzi, L. Angelani, G. Parisi, and G. Ruocco, *Phys. Rev. Lett.* 123, 155502 (2019). *Relation between heterogeneous frozen regions in supercooled liquids and non-Debye spectrum in the corresponding glasses*

10. L. Angelani, M. Paoluzzi, G. Parisi, and G. Ruocco, PNAS 115 (35), 8700 (2018). *Probing the non-Debye low-frequency excitations in glasses through random pinning.* [Alphabetic order]
11. F. Giavazzi, M. Paoluzzi, M. Macchi, D. Bi, G. Scita, L. Manning, R. Cerbino, and M. C. Marchetti, Soft Matter 14, 3471 (2018). *Flocking Transitions in Confluent Tissues.* [Equal contribution]
12. D. Sussman, M. Paoluzzi, M. C. Marchetti, and L. Manning, EPL 121, 36001 (2018). *Anomalous glassy dynamics in simple models of dense biological tissue* [Equal contribution]

List of Publications

Submitted Papers

1. M. Paoluzzi, D. Levis, and I. Pagonabarraga. *Collective dynamics of dense disordered polar active matter* (2022). arXiv:2205.15643

Papers in Peer Reviewed journals

1. N. Pellicciotta, M. Paoluzzi, D. Buonomo, G. Frangipane, L. Angelani, and R. DiLeonardo, Nature Communications 14 (1), 4191 (2023). *Colloidal Transport by light induced gradients of active pressure.*
2. M. Miotto, M. Rosito, M. Paoluzzi, V. De Turre, V. Folli, M. Leonetti, G. Ruocco, A. Rosa, G. Gosti, Frontiers in Cell and Development Biology 11, (2023). *Collective Behavior and Self-Organization in neural rosette morphogenesis.*
3. M. Paoluzzi, and A. Crisanti, Physical Review E 107, 034110 (2023). *Most Probable Path of Active Ornstein-Uhlenbeck particles.*
4. J.P. Rodriguez, M. Paoluzzi, D. Levis, M. Starnini, Physical Review Research 4, 043160 (2022). *Epidemic Processes on self-propelled particles: Continuum and agent-based modeling.*
5. M. Paoluzzi, D. Levis, I. Pagonabarraga, Communications Physics 5, 111 (2022). *From motility-induced phase separation to glassiness in dense active matter.*
6. C. Maggi, N. Gnan, M. Paoluzzi, E. Zaccarelli, A. Crisanti, Communications Physics 5, 55 (2022). *Critical active dynamics is captured by a colored-noise field theory.*
7. M. Paoluzzi, Physical Review E 105, 044139 (2022). *Scaling of the entropy production rate in a ϕ^4 model of active matter.*
8. M. Paoluzzi, N. Gnan, F. Grassi, M. Salvetti, N. Vanacore, A. Crisanti, Scientific Reports 11, 24467 (2021). *A single-agent extension of the SIR model describes the impact of motility restrictions on the COVID-19 epidemic.*
9. G. Gradenigo, M. Paoluzzi, Chaos, Solitons & Fractals 153, 111500 (2021). *How non-equilibrium correlations in active matter reveal the topological crossover in glasses.*
10. M. Paoluzzi, L. Angelani, G. Gosti, M.C. Marchetti, I. Pagonabarraga, G. Ruocco, Physical Review E 104, 044606 (2021). *Alignment interactions drive structural transitions in biological tissues.*

11. L. Angelani, T. Bryk, S. Capaccioli, M. Paoluzzi, G. Ruocco, W. Schirmacher, PNAS 118 (9) (2021). *Do we understand the solid-like elastic properties of confined liquids?* [alphabetic order]
12. C. Maggi, M. Paoluzzi, A. Crisanti, E. Zaccarelli, and N. Gnan, Soft Matter (2021). *Universality class of the motility-induced critical point in large scale off-lattice simulations of active particles*
13. Y. W. Li, L. L. Y. Wey, M. Paoluzzi, M. Pica Ciamarra, Phys. Rev. E 103 (2), 022607 (2021). *Softness, anomalous dynamics, and fractal-like energy landscape in model cell tissues.*
14. M. Paoluzzi, L. Angelani, G. Parisi, and G. Ruocco, Physical Review Research 2, 043248 (2020). *Probing the Debye spectrum in glasses using small system sizes*
15. M. Leoni, M. Paoluzzi, S. Al Bassri, A. Estrada, L. Nguyen, M. Alexandrescu, K. Sherb, and W. Ahmed, Physical Review Research 2, 043299 (2020). *Surfing and crawling macroscopic active particles under hard confinement–inertial dynamics.* [Alphabetic order, equal contribution]
16. M. Paoluzzi, L. Angelani, and A. Puglisi, Phys. Rev. E 102, 042617 (2020). *Narrow-escape time and sorting of active particles from circular domains.*
17. M. Paoluzzi, M. Leoni, and M. C. Marchetti, Soft Matter 16, 6317-6327 (2020). *Information and motility exchange in collectives of active particles.*
18. L. Caprini, U. Marini Bettolo Marconi, C. Maggi, M. Paoluzzi, and A. Puglisi, Physical Review Research 2 (2), 023321 (2020). *Hidden velocity ordering in dense suspensions of self-propelled disks.*
19. M. Paoluzzi, C. Maggi, and A. Crisanti, Physical Review Research 2 (2), 023207 (2020). *Statistical Field Theory and Effective Action Method for scalar Active Matter.*
20. M. Paoluzzi, L. Angelani, Condens. Matter Phys., vol. 22, No. 4, 43608 (2019) *Low-frequency excitations and their localization properties in glasses.*
21. M. Paoluzzi, L. Angelani, G. Parisi, and G. Ruocco, Phys. Rev. Lett. 123, 155502 (2019). *Relation between heterogeneous frozen regions in supercooled liquids and non-Debye spectrum in the corresponding glasses*
22. M. Paoluzzi, M. Leoni, and M. C. Marchetti, Phys. Rev. E 98, 052603 (2018). *Fractal aggregation of active particles.*
23. L. Angelani, M. Paoluzzi, G. Parisi, and G. Ruocco, PNAS 115 (35), 8700 (2018). *Probing the non-Debye low-frequency excitations in glasses through random pinning.* [Alphabetic order]
24. F. Giavazzi, M. Paoluzzi, M. Macchi, D. Bi, G. Scita, L. Manning, R. Cerbino, and M. C. Marchetti, Soft Matter 14, 3471 (2018). *Flocking Transitions in Confluent Tissues.* [Equal contribution]
25. D. Sussman, M. Paoluzzi, M. C. Marchetti, and L. Manning, EPL 121, 36001 (2018). *Anomalous glassy dynamics in simple models of dense biological tissue* [Equal contribution]
26. M. Paoluzzi, C. Maggi, and U. Marini Bettolo Marconi, Phys. Rev. E 97, 022605 (2018). *Effective equilibrium picture in xy -model with exponentially correlated noise.*
27. C. Maggi, M. Paoluzzi, L. Angelani, and R. Di Leonardo, Scientific Reports 7, 17588 (2017). *Memory-less response and violation of the fluctuation-dissipation theorem in colloids suspended in an active bath.*
28. U. Marini Bettolo Marconi, C. Maggi, and M. Paoluzzi, J. Chem. Phys. 147, 024903 (2017). *Pressure in an exactly solvable model of active fluid.*

29. M. Paoluzzi, C. Maggi, U. Marini Bettolo Marconi, and N. Gnan, Phys. Rev. E 94, 052602 (2016). *Critical Phenomena in Active Matter*.
30. M. Paoluzzi, R. Di Leonardo, M. C. Marchetti, and L. Angelani, Scientific Reports 6, 34146 (2016). *Shape and displacement fluctuations in soft vesicles filled by active particles*.
31. U. Marini Bettolo Marconi, M. Paoluzzi, and C. Maggi, Molecular Physics 1-11, (2016). *Effective potential method for active particles*.
32. U. Marini Bettolo Marconi, N. Gnan, M. Paoluzzi, C. Maggi, and R. Di Leonardo, Scientific Reports 6, 23297 (2016). *Velocity distribution in active particles systems*.
33. C. Rainone, U. Ferrari, M. Paoluzzi, and L. Leuzzi, Phys. Rev. E 92, 062150 (2015). *Dynamical arrest with zero complexity: The unusual behavior of the spherical Blume-Emery-Griffiths disordered model*.
34. M. Paoluzzi, R. Di Leonardo, and L. Angelani, Phys. Rev. Lett 115, 188303 (2015) [Cover of the issue]. *Self-Sustained Density Oscillations of Swimming Bacteria Confined in Microchambers*.
35. C. Maggi, M. Paoluzzi, N. Pellicciotta, A. Lepore, L. Angelani, and R. Di Leonardo, Phys. Rev. Lett. 113, 238303 (2014). *Generalized Energy Equipartition in Harmonic Oscillators Driven by Active Baths*.
36. L. Angelani, R. Di Leonardo, and M. Paoluzzi, Eur. Phys. J. E 37 (2014). *First-passage time of run-and-tumble particles*.
37. M. Paoluzzi, R. Di Leonardo, and L. Angelani, Journal of Physics: Condensed Matter 26 (37), 375101 (2014) [cover of the issue]. *Run-and-tumble particles in speckle fields*.
38. M. Paoluzzi, R. Di Leonardo, and L. Angelani, Journal of Physics: Condensed Matter 45 (41), 415102 (2013). *Effective run-and-tumble dynamics of bacteria baths*.
39. A. Crisanti, L. Leuzzi, and M. Paoluzzi, Eur. Phys. J. E 34, 98 (2011). *Statistical mechanical approach to secondary processes and structural relaxation in glasses and glass formers*.
40. L. Leuzzi, M. Paoluzzi, and A. Crisanti, Phys. Rev. B 83, 014107 (2011). *The random Blume-Capel model on cubic lattice: first order inverse freezing in a 3D spin-glass system*.
41. M. Paoluzzi, L. Leuzzi, and A. Crisanti, Phil. Mag. 91, 1966 (2011). *The overlap parameter across an inverse first order phase transition in a 3D spin-glass*.
42. M. Paoluzzi, L. Leuzzi, and A. Crisanti, Phys. Rev. Lett. 104, 120602 (2010). *Thermodynamic first order transition and inverse freezing in a 3D spin-glass*.