Lorenzo Rovigatti

Associate professor of condensed-matter physics

Current address & contacts

Dipartimento di Fisica, Sapienza University of Rome

P.le A. Moro 5, 00185 - Rome, Italy

- Email address: lorenzo.rovigatti@uniroma1.it
- My website
- My profile on scientific databases: Google Scholar, Scopus, ResearcherID
- My github profile

Academic positions

- 2021 - present: Associate Professor, Physics Department, Sapienza University of Rome
- 2018 - 2021: Tenure-track researcher (RTDB), Physics Department, Sapienza University of Rome
- 2017 - 2018: Non-tenured researcher (RTDA), ISC-CNR
- 2016 - 2017: Post-doc research fellow, University of Oxford
- 2014 - 2016: Post-doc research fellow, University of Vienna
- 2012 - 2014: Post-doc research fellow, Sapienza University of Rome

Education

- 2004 - 2007: Bachelor's Degree in Physics, 110/110 e lode (magna cum laude), Sapienza University of Rome
- 2007 - 2009: Master's Degree in Physics, 110/110 e lode (magna cum laude), Sapienza University of Rome

Teaching

- 2024 - present: Course lecturer of Computational Biophysics for Physicists
- 2022 - present: Course lecturer of Introduction to programming (Laboratorio di Calcolo) for Physicists
- 2018 - 2023: Course lecturer of Eletromagnetism (Fisica 2) for Industrial Chemists and Chemists
- 2019 - 2021: Assistant lecturer for Introduction to programming (Laboratorio di Calcolo) for Physicists

Student and post-doc supervision

- 2025 - present: Supervisor of 2 post-doc researchers
- 2022 - present: Supervisor of 2 Ph.D. students
- 2018 - present: Supervisor of 9 master students at Sapienza
- 2018 - present: Supervisor of 5 bachelor students at Sapienza
- 2012 - 2016: co-supervisor of 2 master students at Sapienza and University of Vienna

Funding

- 2025: PI of the NSF-MUR Lead Agency Opportunity of Artificial Intelligence project "Harnessing AI for design and simulation of nucleic acid nanodevices" (446,683 €)
- 2025: University grant on "Biomimetic and biocompatible associative polymer networks with controllable phase behaviour" (9,000 €)
- 2023: Co-PI of the PRIN 2022 PNRR project "Amorphous Rheology" (231,417 €)
- 2023: PI of the PRIN 2022 project "Efficient Light Harvesting with Self-assembled Peptide Nanostructures" (244,437 €)
- 2022: Co-PI of the CECAM/CCP5 sandpit project "Calculation of Surface Free Energy of Molecular and Coarse-Grained Systems" (24,000 £)

- 2022: University grant on “Simulating the growth mechanism of amorphous ices from chemical vapour deposition” (13,000 €)
- 2020: University grant on “Modelling membraneless organelles on a computer” (15,000 €)
- 2018: Rita Levi Montalcini Fellowship (211,173.66 €)
- 2016: Marie Skłodowska-Curie Fellowship (183,454.80 €)
- 2014: Lise-Meitner Fellowship (144,420 €)

Prizes and awards

- 2019: “Alfredo di Braccio” Prize, awarded by Accademia dei Lincei (Italy)
- 2018: Rita Levi Montalcini Fellowship, awarded by MIUR (Italy)
- 2016: ESG-Nano-Prize 2016, awarded by the Erwin Schrödinger Society for Nanosciences (Austria)
- 2016: “Young Investigator Training Program” Prize, awarded during the ECIS 2016 conference (Italy)
- 2016: Marie Skłodowska-Curie Fellowship, awarded by the European Research Council
- 2014: Lise-Meitner Fellowship, awarded by FWF (Austria)
- 2012: HPC-Europa2 Fellowship, awarded by the European Research Council

Summary of Scientific Achievements

I have published 3 book chapters and 70 articles in international peer-reviewed scientific journals. I am first, co-first and/or corresponding author of 35 of those publications, and the majority (39) does not feature my Ph.D. supervisor. Publications include (IF:impact factor): 1 Science (IF: 44.7), 7 ACS Nano (IF:15.88), 1 Physical Review X (IF:15.76), 1 Nature Communications (IF:14.92), 1 Nature Chemical Biology (IF:12.154), 1 Proceedings of the National Academy of Sciences USA (IF:11.2), 5 Physical Review Letters (IF:9.161). According to Google Scholar my H-index is 39 and my work has been cited 4342 times, according to Scopus my H-index is 35 and my work has been cited 2654 times.

Selected oral presentations

I have delivered more than 30 presentations, half of which by invitation. Here is a list of selected invited presentations:

- 2025: Frontiers in Water Biophysics, Erice (Italy)
- 2024: “A Quantum of Matter” seminar series, Trento (Italy)
- 2024: Interdisciplinary challenges in non-equilibrium physics (IntCha24), MPI-PKS, Dresden (Germany)
- 2023: XVI International Workshop on Complex Systems, Andalo (Italy)
- 2022: Online talk for the Nanoseminar series organised by the Utrecht University (The Netherlands)
- 2021: HPC School 2021, Trento (Italy)
- 2020: Workshop on Molecular Dynamics and its Applications to Biological Systems, ICTP/SISSA (Italy)
- 2019: OxDNA users and developers workshop, Oxford (UK)
- 2018: Computational biophysics on your desktop: is that possible?, Trento (Italy)
- 2017: “Fluids and Materials seminars” at the Department of Applied Mathematics, Bristol (UK)
- 2017: Soft Matter, Biomaterials and Interfaces seminar series, Oxford (UK)
- 2013: DNA-based self-assembly: theory, simulations and experiments, CECAM, Vienna (Austria)

Organisation of scientific meetings

- 2023 - present: Scientific Organising Committee member of the Italian Soft Days (a 2-day, ~150 participants meeting held every two years)
- 2021 - present: Programme Committee member of the International Conferences on DNA Computing and Molecular Programming
- 2022: Head of the local organising committee, From Water to Colloidal Water (Rome, Italy)
- 2016: Local Committee member, ECIS 2016 (Rome, Italy)
- 2013: Local Committee member, ISMC 2013 (Rome, Italy)

Institutional responsabilities

- 2025 - present: Head of the Committee for the Planning of Teaching of Physics (Commissione Per La Pianificazione Della Didattica Della Fisica)
- 2024: Member of the departmental panel for the evaluation of the “Seal of Excellence” projects to be financed by the Italian Ministry of the Research and University, Physics Department, Sapienza University of Rome.
- 2023 - present: Member of the steering committee of the funded project “Dipartimento di Eccellenza”, Physics Department, Sapienza University of Rome.
- 2021 - 2023: Head of Departmental Teaching Activities (delegato del Direttore per la Didattica), Physics Department, Sapienza University of Rome.
- 2021: Member of the Committee for the creation of a Bachelor Degree in Artificial Intelligence, Physics Department, Sapienza University of Rome.
- 2017 - 2018: Member of the “ISC Committee for Research Project Management and Evaluation” (Commissione ISC per la Valutazione e la Gestione dei Progetti di Ricerca), Institute of Complex Systems (CNR-ISC).

Reviewing activities

- 2019 - present: External reviewer or committee member for the final evaluation of the Ph.D. thesis of 5 candidates (3 in Italy, one in Spain, one in the UK)
- 2022: Reviewer for the National Science Foundation (USA)
- 2022: Reviewer for the Dutch Research Council (The Netherlands)
- 2021 - 2025: Reviewer for the National Science Center (Poland)
- 2011 - present: Reviewer for Nanoscale, Nat. Commun., Phys. Rev. Appl. Lett., Phys. Rev. B, Phys. Rev. E, Phys. Rev. Lett., Polymers, Soft Matter, Eur. Phys. J. E, J. Chem. Phys., J. Phys. Chem.

Selected publications

1. N. Di Pasquale, J. Algaba, P. Montero de Hijes, I. Sanchez-Burgos, A. R. Tejedor, S. R. Yeandel, F. J. Blas, R. L. Davidchack, J. R. Espinosa, C. L. Freeman, J. H. Harding, B. B. Laird, E. Sanz, C. Vega, L. Rovigatti, “Solid–liquid interfacial free energy from computer simulations: challenges and recent advances”, *Chem. Rev.* **125** 5003 (2025)
2. H. Liu, M. Matthies, J. Russo, L. Rovigatti, R. P. Narayanan, T. Diep, D. McKeen, O. Gang, N. Stephanopoulos, F. Sciortino, H. Yan, F. Romano, P. Šulc, “Inverse design of a pyrochlore lattice of DNA origami through model-driven experiments”, *Science* **384** 776 (2024)
3. V. Sorichetti, A. Ninarello, J. Ruiz-Franco, V. Hugouvieux, E. Zaccarelli, C. Micheletti, W. Kob, L. Rovigatti, “Structure and elasticity of model disordered, polydisperse, and defect-free polymer networks”, *J. Chem. Phys.* **158** 074905 (2023)
4. L. Rovigatti and F. Sciortino, *Phys. Rev. Lett.* **129** 047802 (2022)
5. J. Russo, F. Romano, L. Kroc, F. Sciortino L. Rovigatti, P. Šulc, “SAT-assembly: A new approach for designing self-assembling systems”, *J. Phys. Condens. Matter* **34** 354002 (2021)
6. G. Del Monte, D. Truzzolillo, F. Camerin, A. Ninarello, E. Chauveau, L. Tavagnacco, N. Gnan, L. Rovigatti, S. Sennato, E. Zaccarelli, “Two-step deswelling in the Volume Phase Transition of thermoresponsive microgels”, *Proc. Natl. Acad. Sci.* **118** e2109560118 (2021)
7. V. Sorichetti, A. Ninarello, J. M. Ruiz-Franco, V. Hugovieux, W. Kob, E. Zaccarelli and L. Rovigatti, “Effect of Chain Polydispersity on the Elasticity of Disordered Polymer Networks”, *Macromolecules* **54** 3769 (2021)
8. M. Heidenreich, J. Georgeson, E. Locatelli, L. Rovigatti, S. K. Nandi, A. Steinberg, Y. Nadav, E. Shimoni, S. A. Safran, J. P. K. Doye, E. D. Levy, “Designer protein assemblies with tunable phase diagrams in living cells”, *Nature Chem. Biol.* **16** 939 (2020)
9. A. Suma, E., Poppleton, M., Matthies, P., Šulc, F., Romano, A. A. Louis, J. P. K. Doye, C., Micheletti, L. Rovigatti, “TacoxDNA: A user-friendly web server for simulations of complex DNA structures, from single strands to origami”, *J. Comput. Chem.* **40** 2586 (2019)
10. L. Rovigatti, N. Gnan, A. Ninarello, E. Zaccarelli, “Connecting Elasticity and Effective Interactions of Neutral Microgels: The Validity of the Hertzian Model”, *Macromolecules* **52** 4895 (2019)
11. P. H. Handle, L. Rovigatti, F. Sciortino, “*q*-Independent Slow Dynamics in Atomic and Molecular Systems” *Phys. Rev. Lett.* **122** 175501 (2019)

12. L. Rovigatti, N. Gnan, L. Tavagnacco, J. A. Moreno, E. Zaccarelli, “Numerical modelling of non-ionic microgels: an overview”, *Soft Matter* **15** 1108 (2019)
13. M. J. Bergman, N. Gnan, M. Obiols-Rabasa, J.-M. Meijer, L. Rovigatti, E. Zaccarelli, P. Schurtenberger, “A new look at effective interactions between microgel particles”, *Nat. Commun.* **9** 5039 (2018)
14. L. Rovigatti, G. Nava, T. Bellini and F. Sciortino, “Self-Dynamics and Collective Swap-Driven Dynamics in a Particle Model for Vitrimers”, *Macromolecules* **51** 1232 (2018)
15. N. Gnan, L. Rovigatti, M. Bergman and E. Zaccarelli, “In Silico Synthesis of Microgel Particles”, *Macromolecules* **50** 8777 (2017)
16. E. Bianchi, B. Capone, I. Coluzza, L. Rovigatti and P. D. J. van Oostrum, “Limiting the valence: advancements and new perspectives on patchy colloids, soft functionalized nanoparticles and biomolecules”, *Phys. Chem. Chem. Phys.* **19** 19847 (2017)
17. E. Locatelli, P. H. Handle, C. N. Likos, F. Sciortino and L. Rovigatti, “Condensation and Demixing in Solutions of DNA Nanostars and Their Mixtures”, *ACS Nano* **11** 2094 (2017)
18. N. Mahynski, L. Rovigatti, C. N. Likos and A. Z. Panagiotopoulos, “Bottom-Up Colloidal Crystal Assembly with a Twist”, *ACS Nano* **10** 5459 (2016)
19. L. Rovigatti, P. Šulc, I. Z. Reguly and F. Romano, “A comparison between parallelization approaches in molecular dynamics simulations on GPUs”, *J. Comput. Chem.* **36** 1 (2015)
20. L. Rovigatti, F. Smallenburg, F. Romano and F. Sciortino, “Gels of DNA Nanostars Never Crystallize”, *ACS Nano* **8** 3567 (2014)
21. J. P. K. Doye, T. E. Ouldridge, A. A. Louis, F. Romano, P. Šulc, C. Matek, B. E. K. Snodin, L. Rovigatti, J. S. Schreck, R. M. Harrison and W. P. J. Smith, “Coarse-graining DNA for simulations of DNA nanotechnology”, *Phys. Chem. Chem. Phys.* **15** 20395 (2013)
22. L. Rovigatti, J. M. Tavares and F. Sciortino, “Self-assembly in chains, rings and branches: a single component system with two critical points”, *Phys. Rev. Lett.* **111** 168302 (2013)
23. S. Kantorovich, A. O. Ivanov, L. Rovigatti, J. M. Tavares, F. Sciortino, “Nonmonotonic Magnetic Susceptibility of Dipolar Hard-Spheres at Low Temperature and Density”, *Phys. Rev. Lett.* **110** 148306 (2013)
24. P. Šulc, F. Romano, T. E. Ouldridge, L. Rovigatti, A. A. Louis, and J. P. K. Doye, “Sequence-dependent thermodynamics of a coarse-grained DNA model”, *J. Chem. Phys.* **137** 135101 (2012)
25. L. Rovigatti, J. Russo, and F. Sciortino, “No Evidence of Gas-Liquid Coexistence in Dipolar Hard Spheres”, *Phys. Rev. Lett.* **107** 237801 (2011)