Lorenzo Rovigatti

Date of birth: December 17, 1985
Place of birth: Rome, Italy
Citizenship: Italian
My profile on scientific databases: Scopus, ResearcherID, Google Scholar
Number of published items: 36 refereed papers + 2 book chapter
H-index (Scopus, 27/04/2018): 15
Total citations (Scopus, 28/05/2018): 643

Current address
CNR-ISC, c/o Dipartimento di Fisica
Sapienza Università di Roma
P.le A. Moro 2, 00185
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Education and Career

Sep 2018 – Present	**Rita Levi Montalcini fellow, tenure-track researcher (RTDB)**, *Sapienza Università di Roma*.
May 2017 – Aug 2018	**Non-tenure researcher (RTDA)**, *CNR–ISC*, with Dr. E. Zaccarelli.
Apr 2016 – Apr 2017	**Marie Skłodowska-Curie Individual Fellow**, *University of Oxford*, with Prof. A. Louis.
Mar 2016	**Post-doctoral fellow**, *University of Vienna*, with Prof. C. Likos.
Mar 2014 – Feb 2016	**Lise Meitner fellow**, *University of Vienna*, with Prof. C. Likos.
Dec 2012 – Feb 2014	**Post-doctoral fellow**, *Sapienza Università di Roma*, with Prof. F. Sciortino.
Nov 2009 – Dic 2012	**Dottorato di Ricerca (Ph.D.) in Materials Science**, *Sapienza Università di Roma*, under the supervision of Prof. F. Sciortino.
Apr – May 2012	**HPC-Europa visitor**, *University of Edinburgh*, with Dr. P. J. Camp.
Jun 2011	**Visiting scientist**, *University of Oxford*, with Prof. J. P. K. Doye.
Oct 2007 – Oct 2009	**Laurea Specialistica (Master Degree) in Physics**, *Sapienza Università di Roma*, *110/110 cum laude*.
Mar – May 2009	**Visiting scientist**, *University of Montpellier 2*, with Prof. W. Kob.
Oct 2004 – Oct 2007	**Laurea Triennale (Bachelor Degree) in Physics**, *Sapienza Università di Roma*, *110/110 cum laude*.

Fellowships, Grants & Awards

2018	**Rita Levi Montalcini Fellowship**, *(211,173.66 €)*.
2017	**Italian Scientific Qualification (Abilitazione Scientifica Nazionale)**, *as Associate Professor in Theoretical Condensed Matter Physics*.
2016	**"Marie Skłodowska-Curie" Individual Fellowship**, *(183,454.80 €)*.
2016	**"Young Investigator Training Program" Award**, *ECIS 2016*.
2016	**ESG-Nano-Prize 2016**, *Erwin Schrödinger Symposium*.
2014	**"Lise Meitner" Fellowship**, *(144,420.00 €)*.

Student Supervisions

2017 **Mariarita Paciolla, Master candidate**, *Dipartimento di Fisica, Sapienza Università di Roma*, with Dr. E. Zaccarelli and Dr. N. Gnan.

2016 – present **Ferdinando Randisi, Ph.D. student**, *Rudolph Peierls Centre for Theoretical Physics, Oxford University*, with Prof. A. Louis.

2016 **Michele Fava, Summer intern**, *Rudolph Peierls Centre for Theoretical Physics, Oxford University*, with Prof. A. Louis.

2015 **Maud Formanek, Master candidate**, *Faculty of Physics, University of Vienna*, with Prof. C. N. Likos.

2014 **Manfredo di Porcia, Master candidate**, *Dipartimento di Fisica, Sapienza Università di Roma*, with Prof. F. Sciortino.

2012 – 2016 **Sofia Biagi, Ph.D. student**, *Dipartimento di Fisica, Sapienza Università di Roma*, with Prof. F. Sciortino.

2012 **Simone Dussi, Master candidate**, *Dipartimento di Fisica, Sapienza Università di Roma*, with Prof. F. Sciortino.

Research interests

- Hierarchical self-assembly in polymer- and DNA-based materials.
- Self-assembly in colloidal systems.
- Phase behaviour and dynamics of patchy particles and dipolar fluids.

Talks (invited talks are marked with a *)

2018 **Computer-generated realistic microgels**, *Soft Matter Forefronts*, Atlanta – USA.

***In silico* modelling of microgels**, *Invited talk at the CMF*, San Sebastian – Spain.

2017 **Computer-generated realistic microgels**, *EMLG/JMLG Meeting*, Vienna – Austria.

***Beyond patchy colloids: patchy models at the atomic and molecular scale**, *"Self-assembly: theory and simulations" workshop at SISSA (invited talk)*, Trieste – Italy.

***Hierarchical self-assembly of DNA nanostars: from theory to experiment**, *"Fluids and Materials seminars" at the Department of Applied Mathematics (invited talk)*, Bristol – United Kingdom.

***Hierarchical self-assembly made easy: DNA nanostars as a new class of model systems for complex fluids**, *Soft Matter, Biomaterials and Interfaces seminar series (invited talk)*, Oxford – United Kingdom.

***Hierarchical self-assembly made easy: DNA nanostars as a new class of model systems for complex fluids**, *Invited talk at the MPIPKS*, Dresden – Germany.

2016 **Bottom-Up Colloidal Crystal Assembly with a Twist**, *ECIS 2016*, Rome – Italy.

Soft self-assembled nanoparticles with temperature-dependent properties, *Italian Soft Days*, Milan – Italy.

2015 **Soft self-assembled nanoparticles with temperature-dependent properties**, *FisMat 2015*, Palermo – Italy.

Soft self-assembled nanoparticles with temperature-dependent properties, *101° Congresso SIF*, Rome – Italy.

*__Tetravalent DNA Nanostars as Valence-limited Building Blocks__, *Invited talk at the IIT*, Genova – Italy.

2014 **Tetravalent DNA Constructs as Valence-limited Soft Building Blocks**, *Mini Workshop in Molecular and Statistical Biophysics at SISSA*, Trieste – Italy.

*__Dipolar hard spheres at low temperature and density: structure, thermodynamics and magnetic properties__, *Invited talk*, Montpellier – France.

Gels of DNA nanostars never crystallise, *Italian Soft Days*, Rome – Italy.

Investigating the Phase Behaviour of Valence-limited DNA Constructs on GPUs, *Perspective of GPU Computing in Physics and Astrophysics*, Rome – Italy.

*__Closing the loop: a single-component system with two critical points__, *Central European Statistical Mechanics Mini-Meeting (invited talk)*, Budapest – Hungary.

2013 *__Tetravalent DNA Constructs as Valence-limited, Patchy-like Building Blocks__, *DNA-based self-assembly: theory, simulations and experiments, CECAM workshop (invited talk)*, Vienna – Austria.

Branching in the low-temperature dipolar hard sphere fluid, *International Soft Matter Conference*, Roma – Italy.

2012 *__A coarse-grained DNA model: sequence dependence and some applications__, *DNA in a material world (invited talk)*, Roma – Italy.

2011 **The phase diagram of dipolar hard spheres: a new look**, *SoftComp Annual Meeting*, Heraklion – Crete.

Papers

2018 **How to Simulate Patchy Particles**, *by L. Rovigatti, J. Russo and F. Romano*, *Eur. Phys. J. E*, **41**, (2018) p. 59.

On the effect of the thermostat in non-equilibrium molecular dynamics simulations, *by J. Ruiz-Franco, L. Rovigatti, E. Zaccarelli*, *Eur. Phys. J. E*, **41**, (2018) p. 80.

An Accurate Estimate of the Free Energy and Phase Diagram of All-DNA Bulk Fluids, *by E. Locatelli and L. Rovigatti*, *Polymers*, **10**, (2018) p. 447.

Self-Dynamics and Collective Swap-Driven Dynamics in a Particle Model for Vitrimers, *by L. Rovigatti, G. Nava, T. Bellini and F. Sciortino*, *Macromolecules*, **51**, (2018) p. 1232.

Internal structure and swelling behaviour of in silico microgel particles, *by L. Rovigatti, N. Gnan and E. Zaccarelli*, *J. Phys.: Condens. Matter*, **30**, (2018) p. 044001.

2017 **In Silico Synthesis of Microgel Particles**, *by N. Gnan, L. Rovigatti, M. Bergman and E. Zaccarelli*, *Macromolecules*, **50**, (2017) p. 8777.

Free energy calculations for rings and chains formed by dipolar hard spheres, *by M. Ronti, L. Rovigatti, J. M. Tavares, A. O. Ivanov, S. S. Kantorovich and F. Sciortino*, *Soft Matter*, **13**, (2017) p. 7870.

Void-Based Assembly of Colloidal Crystals, *by N. Mahynski, L. Rovigatti, C. N. Likos and A. Z. Panagiotopoulos*, *G.I.T. Laboratory Journal*, **5-6**, (2017) p. 32.

Limiting the valence: advancements and new perspectives on patchy colloids, soft functionalized nanoparticles and biomolecules, *by E. Bianchi, B. Capone, I. Coluzza, L. Rovigatti and P. D. J. van Oostrum*, *Phys. Chem. Chem. Phys.*, **19**, (2017) p. 19847.

The role of directional interactions in the designability of generalized heteropolymers, *by C. Cardelli, V. Bianco, L. Rovigatti, F. Nerattini, L. Tubiana, C. Dellago and I. Coluzza*, *Sci. Rep.*, **7**, (2017) p. 4986.

Hierarchical self-organization of soft patchy nanoparticles into morphologically diverse aggregates, *by I. C. Gârlea, E. Bianchi, B. Capone, L. Rovigatti and C. N. Likos*, *Curr. Opin. Colloid Interface Sci.*, **30**, (2017) p. 1.

Condensation and Demixing in Solutions of DNA Nanostars and Their Mixtures, *by E. Locatelli, P. H. Handle, C. N. Likos, F. Sciortino and L. Rovigatti*, *ACS Nano*, **11**, (2017) p. 2094.

Re-entrant limits of stability of the liquid phase and the Speedy scenario in colloidal model systems, *by L. Rovigatti, V. Bianco, J. M. Tavares and F. Sciortino*, *J. Chem. Phys.*, **146**, (2017) p. 041103.

Connectivity, Dynamics, and Structure in a Tetrahedral Network Liquid, *by S. Roldán-Vargas, L. Rovigatti and F. Sciortino*, *Soft Matter*, **13**, (2017) p. 514.

2016 **Small-angle neutron scattering and molecular dynamics structural study of gelling DNA nanostars**, *by J. Fernandez-Castanon, F. Bomboi, L. Rovigatti, M. Zanatta, A. Paciaroni, L. Comez, L. Porcar, C. J. Jafta, G. C. Fadda, T. Bellini and F. Sciortino*, *J. Chem. Phys.*, **145**, (2016) p. 084910.

Bottom-Up Colloidal Crystal Assembly with a Twist, *by N. Mahynski, L. Rovigatti, C. N. Likos and A. Z. Panagiotopoulos*, *ACS Nano*, **10**, (2016) p. 5459.

Surface wave excitations and backflow effect over dense polymer brushes, *by S. Biagi, L. Rovigatti, F. Sciortino and C. Misbah*, *Scientific Reports*, **6**, (2016) p. 22257.

Direct Simulation of the Self-Assembly of a Small DNA Origami, *by B. E. K. Snodin, F. Romano, L. Rovigatti, T. E. Ouldridge, A. A. Louis and J. P. K. Doye*, *ACS Nano*, **10**, (2016) p. 1724.

Soft self-assembled nanoparticles with temperature-dependent properties, *by L. Rovigatti, B. Capone and C. N. Likos*, *Nanoscale*, **8**, (2016) p. 3288.

2015 **How soft repulsion enhances the depletion mechanism**, *by L. Rovigatti, N. Gnan, A. Parola and E. Zaccarelli*, *Soft Matter*, **11**, (2015) p. 692.

Temperature-induced structural transitions in self-assembling magnetic nanocolloids, *by S. S. Kantorovich, A. O. Ivanov, L. Rovigatti, J. M. Tavares, F. Sciortino*, *Phys. Chem. Chem. Phys.*, **17**, (2015) p. 16601.

Low temperature structural transitions in dipolar hard spheres: The influence on magnetic properties, *by S. S. Kantorovich, A. O. Ivanov, L. Rovigatti, J. M. Tavares, F. Sciortino, J. Magn. Magn. Mater.*, **383**, (2015) p. 272.

A comparison between parallelization approaches in molecular dynamics simulations on GPUs, *by L. Rovigatti, P. Šulc, I. Z. Reguly and F. Romano, J. Comput. Chem.*, **36**, (2015) p. 1.

2014 **Gels of DNA Nanostars Never Crystallize**, *by L. Rovigatti, F. Smallenburg, F. Romano and F. Sciortino, ACS Nano*, **8**, (2014) p. 3567.

Accurate phase diagram of tetravalent DNA nanostars, *by L. Rovigatti, F. Bomboi and F. Sciortino, J. Chem. Phys.*, **140**, (2014) p. 154903.

2013 **Coarse-graining DNA for simulations of DNA nanotechnology**, *by 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, Phys. Chem. Chem. Phys.*, **15**, (2013), p. 20395.

Self-assembly in chains, rings and branches: a single component system with two critical points, *by L. Rovigatti, J. M. Tavares and F. Sciortino, Phys. Rev. Lett.*, **111**, (2013) p. 168302.

Branching points in the low-temperature dipolar hard sphere fluid, *by L. Rovigatti, S. Kantorovich, A. O. Ivanov, J. M. Tavares and F. Sciortino, J. Chem. Phys.*, **139**, (2013) p. 134901.

On the gas-liquid phase-separation and the self-assembly of charged soft dumbbells, *by S. Dussi, L. Rovigatti, F. Sciortino, Mol. Phys.*, **111**, (2013) p. 3608.

Nonmonotonic Magnetic Susceptibility of Dipolar Hard-Spheres at Low Temperature and Density, *by S. Kantorovich, A. O. Ivanov, L. Rovigatti, J. M. Tavares, F. Sciortino, Phys. Rev. Lett.*, **110**, (2013) p. 148306.

Computing the phase diagram of binary mixtures: A patchy particle case study, *by L. Rovigatti, D. de las Heras, J. M. Tavares, M. M. Telo da Gama, F. Sciortino, J. Chem. Phys.*, **138** (16), (2013) p. 164904.

2012 **Sequence-dependent thermodynamics of a coarse-grained DNA model**, *P. Sulc, F. Romano, T. E. Ouldridge, L. Rovigatti, A. A. Louis, and J. P. K. Doye, J. Chem. Phys.*, **137** (13), (2012) p. 135101.

Quantitative description of the self-assembly of patchy particles into chains and rings, *by J. M. Tavares, L. Rovigatti, and F. Sciortino, J. Chem. Phys.*, **137** (4), (2012) p. 044901.

Self-assembly of short DNA duplexes: from a coarse-grained model to experiments through a theoretical link, *by C. De Michele, L. Rovigatti, T. Bellini, and F. Sciortino, Soft Matter*, **8**, (2012) pp. 8388–8398.

Structural properties of the dipolar hard-sphere fluid at low temperatures and densities, *by L. Rovigatti, J. Russo, and F. Sciortino, Soft Matter*, **8**, (2012) pp. 6310–6319.

2011 **No Evidence of Gas-Liquid Coexistence in Dipolar Hard Spheres**, *by L. Rovigatti, J. Russo, and F. Sciortino, Phys. Rev. Lett.*, **107**, (2011) p. 237801.

Self and collective correlation functions in a gel of tetrahedral patchy particles, *by L. Rovigatti and F. Sciortino*, *Mol. Phys.*, **109** (23-24), (2011) pp. 2889–2896.

The vibrational density of states of a disordered gel model, *by L. Rovigatti, W. Kob, and F. Sciortino*, *J. Chem. Phys.*, **135** (10), (2011) p. 104502.

Book contributions

2017 **A Nucleotide-Level Computational Approach to DNA-Based Materials**, *by F. Romano and L. Rovigatti*, in **Design of Self-Assembling Materials**, edited by I. Coluzza, Cham (2017), ISBN: 978-3-319-71576-6.

2015 **Accurate Coarse-Grained Potentials for Soft Matter Systems**, *by R. Blaak, B. Capone, C. N. Likos and L. Rovigatti*, in **Computational Trends in Solvation and Transport in Liquids**, of the IAS Series **28**, edited by G. Sutmann, J. Grotendorst, G. Gompper and D. Marx. Forschungszentrum, Juelich (2015), ISBN: 978-3-95806-030-2.

Posters

2017 **Towards a realistic description of computer-generated nano- and microgels: assembly protocol, form factors, density profiles and swelling curves of single soft particles**, *10th Liquid Matter Conference*, Ljubljana – Slovenia.

Condensation and demixing in solutions of DNA nanostars and their mixtures, *10th Liquid Matter Conference*, Ljubljana – Slovenia.

2016 **Soft self-assembled nanoparticles with temperature-dependent properties**, *ISMC 2016*, Grenoble – France.

Soft self-assembled nanoparticles with temperature-dependent properties, *MECO-41*, Vienna – Austria.

2014 **Gels of DNA Nanostars Never Crystallize**, *9th Liquid Matter Conference*, Lisbon – Portugal.

2012 **Structure and thermodynamics of the dipolar hard-sphere fluid at low temperatures and densities**, *CLASS Workshop*, Lisbon – Portugal.

2011 **No evidence of gas-liquid coexistence in dipolar hard spheres**, *SimBioMa2011*, Konstanz – Germany.

No evidence of gas-liquid coexistence in dipolar hard spheres, *8th Liquid Matter Conference*, Vienna – Austria.

Organised events

2016 **Local committee member and editor of the book of abstracts**, *ECIS 2016*, Rome – Italy.

2013 **Local committee member and editor of the book of abstracts**, *ISMC 2013*, Rome – Italy.

Institutional Responsibilities

2017 – today **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)*.

Editorial activities

Guest editor of the special issue on "Advances in Computational Methods for Soft Matter Systems" for *The European Physical Journal E*.

Languages

Italian (native), English (proficient) and German (elementary)

Other activities

Reviewer for *Nanoscale*, *Nature Communications*, *Physical Review Applied Letters*, *Physical Review B*, *Physical Review E*, *Physical Review Letters*, *Polymers*, *Soft Matter*, *The European Physical Journal E* and *The Journal of Chemical Physics*.

Lead developer of oxDNA, an open-source simulation package for coarse-grained simulations of DNA and RNA, and of cogli1, a tool for the visualisation and rendering of configurations of coarse-grained systems.