Date of birth: 28 April 1990

Place of birth: Milan (IT)

Nationality: Italian

Driving license: Italian B

# Briefcase with solid fill Work experience

Mar 2022 – present Lise Meitner Post-doctoral Research Fellow  
 *Faculty of Physics, University of Vienna, Vienna (AT) – Prof. Roberto Cerbino group* Project: [Die Nichtgleichgewichtsphysik der kolloidalen Sedimentation](https://pf.fwf.ac.at/de/wissenschaft-konkret/project_pdfs/pdf_abstracts/m3250d.pdf)  
 Keywords: sedimentation; non-equilibrium fluctuations; colloidal suspensions; Differential Dynamic Microscopy

Experimental: Study of non-equilibrium fluctuation in sedimenting colloidal suspensions using Differential Dynamic Microscopy with brightfield and confocal microscopy.

Management: Set up a new laboratory (optics, microscopy, chemistry).

Programming: Main developer of fastddm, a Python package wrapping C++/CUDA code, which allows the analysis of Differential Dynamic Microscopy experiments in seconds or minutes on CPU or GPU, compared to the several hours required by existing codes that perform similar tasks.

2016 – present Research co-Supervisor  
Co-supervision of >20 international university students (graduate and post-graduate) from Politecnico di Milano, La Sapienza Università di Roma, University of Vienna, Università Statale di Milano, Massachusetts Institute of Technology (MIT), University of Guanajuato, Institute of Science and Technology (IST) Austria.

Dec 2018 – Feb 2022 Post-doctoral Research Fellow  
 *Department of Physics, La Sapienza Università di Roma, Rome (IT) – Prof. Francesco Sciortino group*Feb 2021 – Feb 2022Project: Gel di equilibrio di DNA  
 Keywords: DNA nanostars; patchy particles; equilibrium gels; light scattering; Photon Correlation Imaging

Experimental: Study of spatially resolved local dynamics of DNA nanostars equilibrium colloidal gels using Photon Correlation Imaging.

Simulation: Coarse-grained molecular dynamics simulations of DNA nanostars using open-source software oxDNA.

Dec 2018 – Jan 2021Project: [DNA-gel](https://www.lazioinnova.it/app/uploads/2018/12/Progetti-Gruppi-di-Ricerca.pdf)  
 Keywords: DNA nanostars; patchy particles; equilibrium gels; light scattering; Photon Correlation Imaging

Experimental: Design and assembly of a Photon Correlation Imaging (PCI) setup for spatially resolved blended imaging/scattering experiments. Feasibility study for the use of DNA nanostars gels for biomedical purposes, in collaboration with a biomedical group of CNR/La Sapienza Università di Roma/Sant’Andrea Hospital, Rome (IT).

Simulation: Coarse-grained molecular dynamics simulations of DNA nanostars using open-source software oxDNA.

Programming: Development of PCI analysis code in Python/C++/CUDA.

Jun – Oct 2015 Junior Research Intern  
 *Dept. of Chem., Mat. Sci. and Chem. Eng., Politecnico di Milano, Milan (IT) – Prof. Roberto Piazza group*

# Graduation cap with solid fill Education

Nov 2015 – Ott 2018 Ph.D. in Industrial Chemistry and Chemical Engineering  
 *Dept. of Chem., Mat. Sci. and Chem. Eng., Politecnico di Milano, Milan (IT) – Prof. Roberto Piazza group* Thesis: [Experimental study of the sedimentation of complex colloidal suspensions](http://hdl.handle.net/10589/144820) Keywords: sedimentation; colloidal suspensions; gels; centrifugation; optical correlation techniques; velocimetry

Grade: with honors

Experimental: First experimental evidence of promoted sedimentation in systems of particles with strong mutual attractive interactions. Investigation of the settling velocity of binary colloidal suspensions, with focus on the Generalized Archimedes’ principle applied to the dynamics, using standard (PIV, tracking) and advanced (Ghost Particle Velocimetry) velocimetry techniques. Compressive rheology study of depletion gels.

Programming: Development of code for experimental setup control (LabVIEW) and measurement analysis (MATLAB).

Oct 2012 – Apr 2015 Master of Science in Nuclear Engineering  
 *Politecnico di Milano, Milan (IT) – Prof. Roberto Piazza* Thesis: [Experimental study of the sedimentation of complex colloidal suspensions](http://hdl.handle.net/10589/144820)

Track: Nuclear Systems Physics

Grade: 110 with honors

Sep 2009 – Sep 2012 Bachelor of Science in Energy Engineering  
 *Politecnico di Milano, Milan (IT)*

Track: Nuclear Engineering

Grade: 103/110

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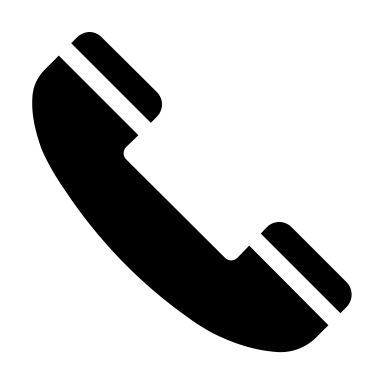
Enrico **LATTUADA  
Researcher**

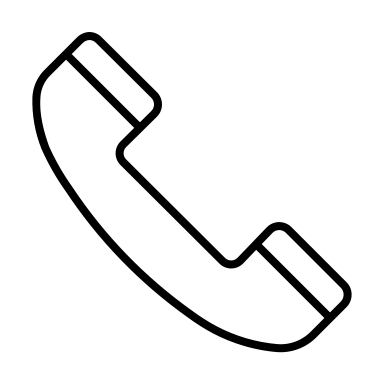
A person in a suit

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## Contacts

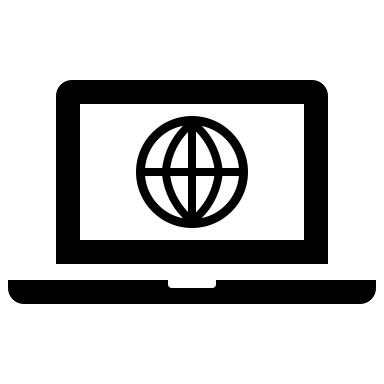
[lattuada.enrico@gmail.com](mailto:lattuada.enrico@gmail.com) [](mailto:lattuada.enrico@gmail.com)

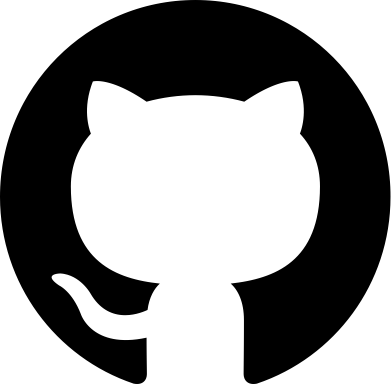
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[0000-0002-8537-0988](https://orcid.org/0000-0002-8537-0988) [A black circle with white letters

Description automatically generated with medium confidence](https://orcid.org/0000-0002-8537-0988)

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## Professional and research interests

* Optical methods and their application to soft matter
* High performance computing with CUDA, C++, and Python
* Sedimentation and fluid dynamics
* Structure, dynamics, self-assembly, and phase-separation in complex fluids
* Research and Development, Physics and Chemistry laboratory

## Soft skills

* Decision-making and problem-solving
* Project management
* Quick learner (and willing to learn)
* Data analysis
* Communication
* Work in teams
* Creativity

## Languages

**Italian** native

**English** professional knowledge

*B2 level - FCE, grade B*

**German** basic knowledge

*A1 level - Sprachenzentrum, University of Vienna (AT)*

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# Diploma with solid fill Schools, Certifications, and Training

ONLINE

Introduction to version control with Git Microsoft Learn, 7 May 2023

GitHub fundamentals - Administration basics and product features Microsoft Learn, 11 May 2023

3D Printing and Modeling for Beginners (MK3S+) Prusa Academy, 6 Nov 2022

Fit4Funding – Your training on EU funding Austrian FFG, Vienna (AT), 1 Jun 2022

SUMMER SCHOOLS

“Machine Learning for Materials Hard and Soft” Erwin Schrödinger Institute, Vienna (AT), 11-22 Jul 2022

15th Bombannes Summer School on Scattering Applied to Soft Condensed Matter  
 Carcans-Maubuisson (FR), 20-28 Jun 2022

1st Summer School on Complex Fluid Flows in Microfluidics University of Porto, Porto (PT), 10-14 Jul 2017

# Publications



1. Interpenetrating gels in binary suspensions of DNA nanostars, E. Lattuada, T. Pietrangeli, F. Sciortino, *J. Chem. Phys.* **157**, 135101 (2022). DOI: [10.1063/5.0117047](https://doi.org/10.1063/5.0117047)
2. Treatment of kidney clear cell carcinoma, lung adenocarcinoma and glioblastoma cell lines with hydrogels made of DNA nanostars, M. Leo, E. Lattuada, D. Caprara, L. Salvatori, A. Vecchione, F. Sciortino, P. Filetici, A. Stoppacciaro, *Biomater. Sci.* **10**, 1304 (2022). DOI: [10.1039/D1BM01643A](https://doi.org/10.1039/D1BM01643A)
3. Spatially uniform dynamics in equilibrium colloidal gels, E. Lattuada, D. Caprara, R. Piazza, F. Sciortino, *Sci. Adv.* **7**, eabk2360 (2021). DOI: [10.1126/sciadv.abk2360](https://doi.org/10.1126/sciadv.abk2360)
4. Hyperbranched DNA clusters, E. Lattuada, D. Caprara, V. Lamberti, F. Sciortino, *Nanoscale* **12**, 23003 (2020). DOI: [10.1039/D0NR04840B](https://doi.org/10.1039/D0NR04840B)
5. DNA-GEL, novel nanomaterial for biomedical applications and delivery of bioactive molecules, E. Lattuada, M. Leo, D. Caprara, L. Salvatori, A. Stoppacciaro, F. Sciortino, P. Filetici, *Front. Pharmacol.* **11**, 1345 (2020). DOI: [10.3389/fphar.2020.01345](https://doi.org/10.3389/fphar.2020.01345)
6. Thermophoresis in self-associating systems: Probing poloxamer micellization by opto-thermal excitation, E. Lattuada, S. Buzzaccaro, R. Piazza, *Soft Matter* **15**, 2140 (2019). [Front Cover](https://doi.org/10.1039/C9SM90048A). DOI: [10.1039/C8SM02386G](https://doi.org/10.1039/C8SM02386G)
7. Compressive yield stress of depletion gels with variable interaction strength, E. Lattuada, *Il Nuovo Cimento C* **42**, 226 (2019). URL: <http://eprints.bice.rm.cnr.it/id/eprint/20669>
8. Compressive yield stress of depletion gels from stationary centrifugation profiles, E. Lattuada, S. Buzzaccaro, R. Piazza, *J. Phys.: Condens. Matter* **30**, 044005 (2018). DOI: [10.1088/1361-648X/aaa2d1](https://doi.org/10.1088/1361-648X/aaa2d1)
9. Use of RAFT macro-surfmers for the synthesis of transparent aqueous colloids with tunable interactions, U. Capasso Palmiero, A. Agostini, E. Lattuada, S. Gatti, J. Singh, C. T. Canova, S. Buzzaccaro, D. Moscatelli, *Soft Matter* **13**, 6439 (2017). DOI: [10.1039/C7SM01084B](https://doi.org/10.1039/C7SM01084B)
10. Colloidal Swarms Can Settle Faster than Isolated Particles: Enhanced Sedimentation near Phase Separation, E. Lattuada, S. Buzzaccaro, R. Piazza, *Phys. Rev. Lett.* **116**, 038301 (2016). [Synopsis](https://physics.aps.org/articles/v9/s9).  
    DOI: [10.1103/PhysRevLett.116.038301](https://doi.org/10.1103/PhysRevLett.116.038301)

# Ribbon with solid fill Fellowships, Grants, and Awards

Lise Meitner post-doctoral fellowship 2022

*FWF (Austrian Science Fund) – 177.980,00€*

Best poster award 2018

*Italian Soft Days 3rd edition, Padua (IT)*

Second best communication award 2017

*103rd National Congress of the Italian Physical Society, Trento (IT)*

Doctoral scholarship 2015

*MIUR (Italian Ministry of Education, University, and Research)*

# Laptop with solid fill Skills and Competences

|  |  |
| --- | --- |
| PROGRAMMING AND COMPUTING   * **Python** * **C++** * **CUDA** * MATLAB (MathWorks) * LabVIEW (National Instruments)   CAD AND 3D PRINTING   * **Inventor** and **Fusion 360** (Autodesk) * Solid Edge (Siemens) * SOLIDWORKS (Dassault Systèmes) * Prusa Slicer   IMAGE ANALYSIS   * Fiji ImageJ | OPERATING SYSTEMS   * Windows * Ubuntu Linux * MacOS   OFFICE SUITES   * **Microsoft Office (Word, Excel, PowerPoint)** * Apple iWork   OTHER TOOLS   * **LaTeX** (markup language) * **Git** (Version Control System) * **GitHub** * Blender (3D graphics) * Origin Pro (scientific graphing) |

# Miscellaneous with solid fill Other Activities

Reviewer for *Journal of Physics: Condensed Matter*, *Soft Matter*, and *Papers in Physics*.

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## Bio

I am a Lise Meitner postdoc research fellow working in the Group of Roberto Cerbino at the Faculty of Physics of the University of Vienna. My research interests include the investigation of the structure and dynamics of complex colloidal suspensions using optical techniques and the development of high-performance codes for experiments analysis (using Python and C++/CUDA).

My doctoral work focused on the experimental study of the (natural and forced) sedimentation of particle suspensions and colloidal gels. My investigation of the settling velocity in colloidal suspensions provided the first experimental proof of the promoted sedimentation in suspensions with strong attractive interactions. The results obtained also helped to interpret in a new light the behavior of protein suspensions and the analysis of analytical ultracentrifugation data. As a side project, I also investigated the thermophoresis of amphiphilic block copolymers around the micellization temperature.

During my first postdoc, in Rome, I investigated the peculiar dynamic properties of equilibrium gels made of DNA nanostars – particles having multiple arms departing from a common central junction –, which are able to interact through sticky tips on the arms. The results I obtained proved that equilibrium gels are in fact homogeneous in space, contrarily to standard gels, which form heterogeneous networks.

My current project deals with the experimental study of the concentration and velocity fluctuations in settling and sedimented colloidal suspensions using advanced optical techniques (including Differential Dynamic Microscopy).

I am a highly motivated researcher who is always enthusiastic about contributing to research and development projects. I am eager to collaborate with interdisciplinary teams and am dedicated to continuous learning and improvement, actively striving to expand my knowledge and acquire new tools and skills to deliver high-quality work and make a positive impact.