CV dated October 7th 2026 for

# MATHIAS CASIULIS

SCIENTIST, TEACHER, CREATOR

## Basic Information


Pr. Mathias Casiulis (they/them)

0000-0002-5370-076X

56663267300

Mathias-Casiulis

mathias.casiulis_at_apctp.org

@QuasiUlysse

https://github.com/mkasiulis

TheLutetiumProject (EN)

LeProjetLutetium (FR)


## Education

**Sorbonne Université**
**PhD in Physics (2016-2019)**

**Ecole Normale Supérieure (Paris)**
**ICFP Master's Program**
Quantum Physics Major (2015-2016)
Graduated magna cum laude

**ESPCI Paris**
Class of 2012
Physics Valedictorian

**Lycée Louis-le-Grand (Paris)**
Preparatory Classes (2010-2012)
Physics and Chemistry majors

## Accomplishments

PRE Reviewer Excellence Award (2026)
Alexei Likhtman Poster Prize (2025)
APS Soft Matter Video Prize (2024)
APS Milton van Dyke Award (2019)
APS Milton van Dyke Award (2017)
Physics Valedictorian at ESPCI (2015)

## Languages

### Human languages

**French** *(native)*, **English** *(bilingual)*, **Spanish** *(intermediate)*, **Lithuanian** *(basic)*, ***Korean*** *(basic)*

### Computer languages

**Rust** *(preferred)*,
**Python**, **C/C++**, **Wolfram language** *(proficient)*
**Fortran**, **Matlab, Julia** (notions)

## Research

**Junior Group Leader (Assistant Professor)**
**Complexity, Disorder and Dynamics Group, APCTP, South Korea | 2026 -**
*Max-Planck-style group leader with generous funding to hire postdocs*

**Senior Research Scientist - Understanding and harnessing disorder**
**Center for Soft Matter Research, New York University | 2022 - 2026**
*Principal investigator: S. Martiniani*

**PostDoc - Non-equilibrium statistical mechanics of self-propulsion**
**Technion - Israel Institute of Technology, Haifa | 2020 - 2022**
*Principal investigator: D. Levine*

**PhD - Collective Motion without activity**
**LPTMC Lab, Sorbonne Université Paris | 2016 - 2019**
*Supervisors: M. Tarzia, L. F. Cugliandolo, O. Dauchot*

**Selected Publications (‡ indicates equal contribution)**

- A. H. Shih‡, **M. Casiulis‡**, S. Martiniani,
  *Fast Generation of Spectrally-Shaped Disorder,*
  *Physical Review E 110 (3), 034122 (2024),*
  ***Featured in Physics, Editor's Suggestion, Award-Winning***
- ***M. Casiulis*** *et al.*,
  *A geometric condition for robot-swarm cohesion and cluster-flock transition,*
  *PNAS 122 (37), e2502211122 (2025)*
- **M. Casiulis‡**, A. H. Shih‡, S. Martiniani,
  *Gyromorphs: a new class of disordered functional materials,*
  *Physical Review Letters 135 (19), 196101 (2025),*
  **Editor's Suggestion**
- P. Suryadevara‡, **M. Casiulis‡**, S. Martiniani,
  *The Basins of Attraction of Soft Sphere Packings Are Not Fractal,*
  *PNAS (2026) [In press]*

## Mentoring

Leading a group of 2 postdocs at APCTP
Mentored 2 high schoolers, 3 undergraduates, 5 graduates at NYU.

## Teaching

Coordinator of "Physics for All" - Ecole Normale Supérieure (2016-2019)
Teaching Assistant - Sorbonne Université (2016-2019)
Teaching Assistant - Lycée Louis-le-Grand (2012-2014)

## Outreach

Co-founder and Vice-president of The Lutetium Project (2014-2021)
*22,000 subscribers across 2 languages | 800,000 views*
Producer, scriptwriter, and occasional host for an outreach YouTube channel focused on soft matter physics and optics.

## Complete List of Publications (‡ indicates equal contribution)

- **M. Casiulis**, S. Martiniani,
  *Fast generation of spectrally shaped disorder, on the sphere*
  ArXiv:2608.24867 (2026) [In review]
- **M. Casiulis‡**, S. Anand‡, S. Martiniani,
  *Hyperuniform systems are maximally irreversible*
  ArXiv:2607.07411 (2026) [In review]
- **M. Casiulis,** L. F. Cugliandolo,
  *Hamiltonian flocks: Time-Reversal Symmetry and its consequences*
  J. Stat. Mech. (2026) 073207 (2026)
- L. V. Luzzato, **M. Casiulis**, S. Martiniani, I. A. Kovács.
  *Spatial and Temporal Cluster Tomography of Active Matter*
  ArXiv:2511.09444 (2025) [In review at PRL]
- ***M. Casiulis‡**, A. H. Shih‡, S. Martiniani,*
  *Gyromorphs: a new class of functional disordered materials,*
  *Physical Review Letters 135 (19), 196101 (2025).* **Editor's Suggestion**
- P. Suryadevara‡**, M. Casiulis‡**, S. Martiniani,
  *The Basins of Attraction of Soft Sphere Packings Are Not Fractal,*
  *ArXiv:2409.12113 (2024) [In press at PNAS]*
- ***M. Casiulis,** E. Arbel, Y. Lahini, S. Martiniani, N. Oppenheimer, M. Yah Ben Zion,*
  *A geometric condition for robot-swarm cohesion and cluster-flock transition,*
  *PNAS 122 (37), e2502211122 (2025)*
- A. H. Shih‡, **M. Casiulis‡**, S. Martiniani,
  *Fast Generation of Spectrally-Shaped Disorder,*
  *Physical Review E, 110 (3), 034122 (2024).* ***Featured in Physics, Editor's Suggestion***
- C. Anzivino‡, **M. Casiulis‡**, T. Zhang, S. Martiniani, A. S. Moussa, A. Zaccone,
  *Estimating RCP as the densest isostatic packing in polydisperse hard spheres,*
  *Journal of Chemical Physics 158, 044901 (2023)*
- **M. Casiulis**, S. Martiniani,
  *When you can't count, sample! Computable entropies beyond equilibrium from basin volumes,*
  *Papers in Physics 15, 150001 (2023)*
- **M. Casiulis**, D. Levine,
  *Emergent Synchronization and Flocking in Purely Repulsive Self-Navigating Particles,*
  *Physical Review E, 106(4), 044611 (2022)*
- **M. Casiulis**, D. Hexner, D. Levine,
  *Self-propulsion and self-navigation: Activity is a precursor to jamming,*
  *Physical Review E 104, 064614 (2021)*
- G. Durey, Q. Magdelaine, **M. Casiulis,** H. Kwon, J. Mazet, P. Chantelot, A. Gauthier, C. Clanet, D. Quéré,
  *Droplets Impaling on a Cone,*
  *Physical Review Fluids 5, 110507 (2020)*
- **M. Casiulis,** M. Tarzia, L. F. Cugliandolo, O. Dauchot,
  *Velocity and Speed Correlations in Hamiltonian Flocks,*
  *Physical Review Letters 124, 198001 (2020)*
- **M. Casiulis**, M. Tarzia, L. F. Cugliandolo, O. Dauchot,
  *Order by disorder: saving collective motion from topological defects in a conservative model,*
  *Journal of Statistical Mechanics, 013209 (2020)*
- **M. Casiulis**
  *Study of a non-Galilean Hamiltonian liquid: collective motion without activity*
  *PhD Thesis, Sorbonne Université, NNT: 2019SORUS647, tel: 03347594*
- **M. Casiulis**, M. Tarzia, L. F. Cugliandolo, O. Dauchot,
  *Ferromagnetism-induced phase separation in a two-dimensional spin fluid*
  *Journal of Chemical Physics 150(15), 154501 (2019)*
- G. Durey, H. Kwon, Q. Magdelaine, **M. Casiulis,** J. Mazet, L. Keiser, H. Bense, P. Colinet, J. Bico, E. Reyssat
  *Marangoni bursting: Evaporation-induced emulsification of a two-component droplet,*
  *Physical Review Fluids 10, 100501 (2018)*
- M. Dupont-Nivet, **M. Casiulis,** T. Laudat, C. I. Westbrook, S. Schwartz,
  *Microwave-stimulated Raman adiabatic passage in a Bose-Einstein condensate on an atom chip,*
  *Physical Review A 91, 053420 (2015)*

## Patents

- ***M. Casiulis‡**, A. H. Shih‡, S. Martiniani, U.S. Provisional Patent Application No. 63/651,613 filed May 24, 2024 Entitled "SYSTEM, METHOD AND COMPUTER-ACCESSIBLE MEDIUM FOR ACCELERATED GENERATION OF STATISTICALLY CORRELATED POINT STRUCTURES"*

## Awards and honors

- **Physical Review E Reviewer Excellence 2026 Award | 2026**
- **Alexei Likhtman Poster Prize, 9th Edwards Symposium, University of Cambridge | 2025**
- **APS-DSOFT Gallery of Soft Matter, Video Prize | 2024**
- **APS-DFD Milton Van Dyke Award, First Prize | 2019**
- **APS-DFD Milton Van Dyke Award, First Prize | 2017**.

## Grants and Funding

- ***Lutetium Project Funding,*** Various sources, about 15000 Euros | 2014-2020

Co-wrote and applied funding applications for the Lutetium Project, used to buy video equipment and pay artists working on the project as contractors. Main sources of funding were the Paris Sciences et Lettres student project calls (about 2000 Euros), the ESPCI Alumni Association funding calls (about 5000 Euros), and the ESPCI Fund project calls (remaining amount).

- **EDPIF Doctoral Fellowship,** EDPIF, PI: Marco Tarzia & Leticia F. Cugliandolo| 2016-2019

Theses in France are typically funded through Graduate Schools, that grant fellowships to students based on their research project after a selective written and oral examination. This fellowship consists in 3 years of salaries.

- **ESPCI Alumni Travel Grant,** 1000 Euros, PI: Olivier Dauchot | 2016

Secured travel compensation from the ESPCI Alumni Association to attend the Beg Rohu Summer School 2016 before my PhD started.

- **Air Force Office Of Scientific Research - Young Investigator Research Program,** PI: Stefano Martiniani | 2025

Co-wrote all stages of a funding application for about 450,000 USD with Pr. Stefano Martiniani.
FOA number: FOAAFRLAFOSR20240004

- **Junior Group Leader Position, Asia-Pacific Center for Theoretical Physics** | 2026

Recurrent institute-provided annual budget of 100,000,000 KRW to hire 2 postdoctoral researchers continuously, and 50,000,000 KRW per annum for equipment, travels, etc.

## Mentoring

- ***Tom Zhang (now at Caltech),*** High School Project at NYU | 2022

Worked on symbolic regression for values of RCP against polydispersity. Co-author of one of my papers.

- **Milan Lustig (now Thiel Fellow and founder of Spring Silicon),** High School Project at NYU | 2023

Worked on implementing Nested Sampling in Rust for soft sphere potentials.

- **Runjia "Orion" Yang (Courant)**, AM-SURE Research Fellow at NYU | 2023

Worked on implementing Information-Theoretical entropy measurements based on sampling match lengths in simple cases alongside Carmel Pe'er, and on basic applications to neuroscience datasets.

- **Carmel Pe'er (Harvey Mudd College, now grad. student at the Center for Data Science NYU)**, AM-SURE Research Fellow at NYU | 2023

Worked on implementing Information-Theoretical entropy measurements based on sampling match lengths in simple cases alongside Runjia "Orion" Yang, and on basic applications to neuroscience datasets.

- **Nicholas Labranche**, NYU Undergraduate Project | 2023

Worked on assessing whether the disorder-order transition observed when making 2d Stealthy Hyperuniform Structures was also observed in 3d point patterns.

- **Praharsh Suryadevara (graduated)**, NYU Graduate Student | 2022-2026

Worked on the study of the Potential Energy Landscape of soft repulsive spheres in the jammed regime. One paper is out, another in preparation.

- **Aaron H. Shih (now postdoc at the University of Fribourg, Switzerland)**, NYU Graduate Student | 2022-2025

Worked on the implementation of the Fast Reciprocal-Space Correlator (FReSCo), as well as its use to produce bandgap materials, leading up to the definition of gyromorphs. Two papers out, one in preparation.

- **Elijah House**, NYU Graduate Student | 2025-Present

Worked on a Monte Carlo algorithm to efficiently sample high-dimensional shapes defined as basins of attractions of a flow field.

- **Huijie Chen**, NYU Graduate Student | 2025-Present

Worked on the implementation of 3-body correlation optimizer for point patterns, as well as the characterization of the resulting point patterns

- **Gieberth Rodriguez-Lopez**, APCTP Postdoc | 2026 - Present

Works on the behavior of force-aligning active matter, in particular dense phases and mixtures

- **Surajit Chakraborty**, APCTP Postdoc | 2026 - Present

Works on disordered systems, in particular mechanical metamaterials and jammed packings

## Service Tasks

- ***Elected PhD Students representative,*** LPTMC | 2016-2019

Represented the voice and interests of PhD Students at Faculty Meetings during my PhD.

- **APS March Meeting 2025 Focus Session Organizer and Chair,** APS | 2024-2025

Proposed and organized the Focus Session "Long-Range Correlations in Disordered Matter", sponsored by the GSNP thematic group and co-sponsored by DSOFT. Selected and sorted abstracts, invited a speaker, chairing the session.

- **Peer Review for physics journals,** Various | 2018-Present

Reviewed over 50 papers for a variety of journals, notably Physical Review Letters, Physical Review E, The Journal of Chemical Physics, Soft Matter, and the Proceedings of the National Academy of Science of the United States.
Usual topics cover soft matter, statistical mechanics, and the theory of liquids

# Talks, Schools and Conferences (Research)

**Bold** locations indicate invited talks

- *"A length scale for time-reversal symmetry breaking", From Glasses to Life: Non-equilibrium Physics of Complex Matter Workshop, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan, December 2026*
- *"**Optimizing spectral properties of point patterns for disordered material design**", Seminar, Shanghai Jiao Tong University, Shanghai, China, November 18th 2026*
- *"**Correlated disorder: towards messy metamaterials**", APCTP International Scientific Symposium & Forum, APCTP, Pohang, Korea, November 10th 2026*
- *"**Complexity, Disorder, Dynamics -- quantifying and harnessing messiness**", APCTP In-house Research Symposium, APCTP, Pohang, Korea, October 15th 2026*
- *"**From Hyperuniformity to Gyromorphs: Generating Correlated Disorder from Non-equilibrium Dynamics**", Invited 90mn+30mn lecture at the 154th monthly Statistical Physics Meeting of the Korean Physical Society, UNIST, Ulsan, September 19th 2026*
- *"**Robotic Swarms can Pull their Weight to Cluster or Flock**", Biolunch Seminar, University of Cambridge, United Kingdom, July 16th 2026*
- *"Hyperuniform systems are maximally irreversible", E. Majorana-WE-Heraeus Workshop, EMFCSC, Erice, Sicily, Italy, July 2nd 2026*
- *"**Robotic Swarms can Pull their Weight to Cluster or Flock**", Statistical Physics Seminar, Sapienza University, Rome, Italy, June 30th 2026*
- ***"Optimizing spectral properties of point patterns for disordered material design", Scheffold Group Seminar,** Fribourg University, Fribourg, Switzerland, May 18th 2026*
- ***"Understanding and harnessing disorder, from point patterns to materials", JRG Leaders Selection Symposium**, Asia-Pacific Center for Theoretical Physics (APCTP), Pohang, South Korea, May 13th 2026*
- ***"The specter of disorder: Imprinting function into messy materials", Stellenbosch University Physics Colloquium,** Stellenbosch, South Africa, April 28th, 2026*
- *"Entropy Production and Irreversibility in Random Organizing Models", CSMR Monday meetings, New York University, New York, March 30th, 2026*
- ***"Understanding and harnessing disorder, from point patterns to materials", Physics Seminar,** Guangdong-Technion Israel Institute of Technology (GTIIT), Shantou, China, November 17th 2025*
- ***"Understanding and harnessing disorder, from point patterns to materials", LOMA Seminar**, Université de Bordeaux, November 13th 2025*
- ***"Understanding and harnessing disorder, from point patterns to materials", LIPhy Seminar**, Université Grenoble-Alpes, November 4th 2025*
- ***"Understanding and harnessing disorder, from point patterns to materials", CPT Seminar,** Université Aix-Marseille, France, October 7th 2025*
- *"Correlated Disorder as Metamaterials", 9th Edwards Symposium, Cambridge University, September 2025*
- *"Understanding and Harnessing Disorder Through Optimization", 4èmes Journées du GDR IDE, Sète,* September 2025
- *STATPHYS satellite: Classical and Quantum Complexity in Statistical Mechanics, Molveno, July 2025 - Poster*
- ***"Robotic Swarms can Pull their Weight to Cluster or Flock", Laboratoire Charles Coulomb Seminar**, University of Montpellier,* July 9th 2025
- *"Gyromorphs: a new class of functional disordered materials", APS Global Physics Summit 2025, Anaheim, March 19th 2025*
- ***"Painting in Fourier Space",* APS Global Physics Summit 2025 Invited Session**, Anaheim, March 17th 2025
- "Understanding and Harnessing Disorder", OIST Seminar, Onna, Okinawa, Japan, January 29th 2025
- **"Fast generation of spectrally shaped disorder", Hyperuniformity Workshop, INRIA**, Paris, December 11th-December 13th 2024
- "Spectral Optimization for Functional Materials", Simons Center for Computational Physical Chemistry Symposium, September 2024
- Center for Soft and Living Matter Opening Symposium, University of Pennsylvania, June 2024 - Poster
- "Shaping and Harnessing disorder in photonic materials", APS March Meeting 2024, Minneapolis, March 2024
- "Spectrally-Shaped Disorder for Materials Design and Integration", Berkeley Statistical Physics Meeting, Berkeley, January 2024
- *Les Houches Summer School 2023*: *Waves in Complex Media, From Theory to Practice* - Poster
- **"A coordination approach to Random Close-Packing", Simons Center for Computational Chemistry Seminar**, New York, May 8th, 2023
- Inaugural Symposium of the Simons Center for Computational Physical Chemistry, New York, October 7th, 2022 - Poster
- "A coordination approach to random close-packing", CSMR Monday meetings, September 26th, 2022
- "Volumes in high-dimensional landscapes" - NCS-17 meeting, Stevens Institute of Technology, Hoboken, June 24th, 2022
- **"Direct Measurements of configurational entropies" - Physics of Information Workshop**, NYU, New York, May 24th, 2022
- **"Self-navigating particles: escapes, jams, and sync" - Gulliver lab Active Matter Meeting**, Paris, December 9th, 2021
- **"Self-navigating particles: escapes, jams, and sync" - Physics Department Seminar, Technion**, Haifa, July 7th, 2021
- **"Collective Motion Without Activity" - Theoretical Physics Journal Club, Technion**, Haifa, January 26th, 2020
- **"Collective Motion Without Activity" - MSC lab Seminar**, Paris, December 5th, 2019
- **"Collective Motion Without Activity" - Gulliver lab Active Matter Meeting**, Paris, May 28th, 2019
- **"Collective Motion Without Activity" - Gov lab group seminar at the Weizmann Institute of Science**, Rehovot, January 29th, 2019
- **"Collective Motion without Activity" - Hayakawa group seminar at YITP**, Kyoto, December 21st, 2018
- **"Collective Motion without Activity" - Osaka Cybermedia Center Seminar**, Osaka, December 21st, 2018
- **"Collective Motion without Activity" - Simons Collaboration "Cracking the Glass Problem" seminar**, Paris, November 15th, 2018
- *Les Houches Summer School 2018: Active Matter and Non-Equilibrium Statistical Physics - Poster*
- *Journées de Physique Statistique 2018 (January 25th and 26th, 2018, ESPCI Paris) - Short Talk: "Collective Motion In Equilibrium"*
- *Beg Rohu Summer School 2017: Out of equilibrium dynamics, evolution and genetics - Poster*
- *Beg Rohu Summer School 2016: Concepts and Methods of Statistical Physics - Poster*

# Papers, Talks and Conferences (Outreach)

- "Active Particles Push the Boundaries of Two-Dimensional Solids", **Physics 16, 146**, 2023
- "How do I make this plot?? A few ideas on data visualization", **Courant MSG lunch meetings**, New York, April 27th, 2023
- "Different Minds Make Better Outreach" - **TEDx Talk** at the TEDxSorbonneU "Synergies of the Mind", Paris, October 18th 2019
- "The Lutetium Project", **IPGG Microscale Affairs Seminar**, Paris, January 9th, 2019
- YouTube Masterclass "#EllesFontYouTube | Elles Font la Culture", YouTube Space Paris, November 21st, 2018
- "La Méthode Scientifique - La 500ème" - **La Méthode Scientifique, sur France Culture**, November 16th, 2018
- "Table ronde des actualités des sciences et de la recherche" - **La Méthode Scientifique, sur France Culture**, May 25th, 2018
- "Le Projet Lutétium", **Soirée grand public des Troisièmes Rencontres Scientifiques des Grands Causses**, April 10th, 2018
- "Le Projet Lutétium : Recherche expérimentale, Création scientifique et Vulgarisation scientifique sur YouTube" - **Conférence grand public du Réseau de Jeunes de la Société Chimique de France section Bourgogne Franche-Comté**, Université de Bourgogne, March 30th, 2018
- "How to popularize science?" - **Round table for the Open Days in Biology, Computer Science and Mathematics (JOBIM)**, July 7th, 2017
- "La notion de collectif en art-science" - **Table ronde pour l'antenne parisienne du Festival Imagine Science**, June 3rd, 2017
- "Peut-on apprendre sur Internet en France ?" - **La Méthode Scientifique, sur France Culture**, December 9th, 2016
- "Table ronde des actualités des sciences et de la recherche" - **La Méthode Scientifique, sur France Culture**, 28 octobre 2016
- "Le Projet Lutétium", **La Tête au Carré, sur France Inter**, October 7th, 2016

## Detailed education

- ***PhD in Physics,*** *LPTMC Lab, Sorbonne Université, Paris | 2016-2019*

I studied the behavior of a non-Galilean yet conservative Hamiltonian model of polar particles. Due to a coupling between the polar degree of freedom and the linear velocity, this system exhibits a rich phase behavior, comprising a phase separation, spontaneous collective motion, and magnetically frustrated phases that can all be captured within the framework of equilibrium statistical mechanics. The work was largely numerical, using Molecular Dynamics (MD) simulations, with some analytical elements to get mean-field level predictions.

- **Master's degree, Quantum Physics Major (magna cum laude)**, ICFP-ENS Program, ENS Paris | 2015-2016

Theory-oriented master's program, with a quantum coloration.

- **Master's degree, Physics Major (Physics class valedictorian)**, ESPCI Paris | 2012-2015

ESPCI Paris is a French *Grande École*, that teaches hands-on physics, chemistry and biology, with a strong emphasis on labs. The curriculum focuses on soft matter, and wave propagation in complex media. The degree is a French "Diplôme d'Ingénieur des Grandes Écoles".

- **Preparation to the *Grandes Écoles* competitive entrance exam,** Lycée Louis-le-Grand | 2010-2012

Prior to taking the competitive entrance exam to *Grandes Écoles*, French students undergo at least two years of preparation. Lycée Louis-le-Grand is the top such place nationwide in science.

## Detailed teaching activity

- ***Lecturer for "Physics for All", 15h,*** Department of Physics, ENS Paris | 2016-2019

I wrote lecture notes, gave lectures, prepared exercises, graded, and wrote exams together with 3 other lecturers. The course, worth 3 European credits (ECTS), was an introduction to modern physics for students in humanities at ENS. My own lectures covered the applications of statistical physics to polymer physics, chemical physics, biophysics, and econophysics; as well as quantum states of matter.

- **TA for "Statistical Mechanics" (3rd year undergrad course), 64h,** Department of Physics, Sorbonne Université | 2019

I created new exercise sheets and gave exercise classes going from macroscopic thermodynamics to the foundation of statistical mechanics and some basics of stochastic dynamics. A large part of the sheets was renewed alongside Matthieu Micoulaut. I also co-wrote and graded homework as well as the exams.

- **TA for "Newtonian Mechanics" (1st year undergrad course), 128h**, Department of Physics, Sorbonne Université | 2016-2018

I taught exercise classes as well as lab classes in basic mechanics, going from Newton's laws to the response of driven harmonic oscillators. I also graded hundreds of exams for the course.

- **TA in Physics and Chemistry in *Classes Préparatoires* (1st and 2nd year undergrads), 150h,** Lycée Louis-le-Grand | 2012-2014

I taught weekly oral examinations on the whole of physics, from Newtonian mechanics and basic electricity to electromagnetics, optics, and hydrodynamics, in the structure that prepares students for the competitive entrance exams to *Grandes Écoles*. Exercise writing was completely at my own discretion, and so was the grading.

## Outreach videos (outside the Lutetium Project)

- "*Painting Correlations in Fourier Space*", 2024 Winner of the APS DOST Gallery of Soft Matter, Featured in Physics.
  *Contribution: Animation, edition, sound mixing, screenplay*
- "*The intricate ballet of self-navigating particles: Flocks, synchronization, laning and defects*", *2022 entry to the APS DSOFT Gallery of Soft Matter*
  *Contribution: Animation, edition, sound mixing, screenplay*
- "*Cuts of basins of attraction of soft spheres in high dimensions*", *2022 entry to the APS DSOFT Gallery of Soft Matter*
  *Contribution: Animation, edition, sound mixing, screenplay*

**Note for non-francophones:**
La Méthode Scientifique was a daily broadcast on the national French radio "France Culture." It was an outreach broadcast that focused on recent advances in scientific research. La Tête au Carré was its counterpart on the more general national French radio "France Inter." Both were listened to by several tens of thousands of French speakers live, and podcasts had an audience roughly an order of magnitude larger.

## Professional references - Research (Collaborators)

Preferred ones are placed in the left-most column

### Pr. Leticia F. Cugliandolo

*Full Professor of Physics at Sorbonne Université*
*PhD co-advisor*
**Phone:** (+33) 1 44 27 73 99
**E-Mail:** leticia@lpthe.jussieu.fr

### Pr. Marco Tarzia

*Associate Professor of Physics at Sorbonne Université*
*PhD co-advisor*
**Phone:** (+33) 1 44 27 72 40
**E-Mail:** marco.tarzia@gmail.com

### Pr. Dov Levine

*Full Professor of Physics at Technion*
*Postdoctoral advisor*
**Phone:** (+972) 04 829 3682
**E-Mail:** levine@technion.ac.il

### Pr. Olivier Dauchot

*Full Professor of Physics at CNRS/ESPCI Paris*
*PhD co-advisor, Master's Project advisor*
**Phone:** (+33) 1 40 79 58 42
**E-Mail:** olivier.dauchot@espci.fr

### Pr. Stefano Martiniani

*Assistant Professor of Physics and Chemistry at NYU*
*Postdoctoral advisor*
**Phone:** (+1) 212 992 8316
**E-Mail:** stefano.martiniani@nyu.edu

### Pr. Paul Chaikin

*Silver Professor of Physics at NYU*
*Collaborator*
**Phone:** *(+1) 212 9987694*
**E-Mail:** chaikin@nyu.edu

## Professional references - Research (External)

Preferred ones are placed in the left-most column

### Pr. Jorge Kurchan

*Professor of Physics at CNRS/ENS Paris*
External reference, familiar with my work
**E-Mail:** jorge.kurchan@phys.ens.fr

### Pr. Daan Frenkel

*Professor of Chemistry at the University of Cambridge*
External reference, familiar with my work
**Phone:** *+44(1223)336377*
**E-Mail:** df246@cam.ac.uk

## Professional references - Teaching

Preferred ones are placed in the left-most column

### Pr. Matthieu Micoulaut

*Full Professor of Physics at Sorbonne Université*
*Lecturer for "From microscopics to macroscopics"*
*3rd-year course within the physics minor electives*
**Phone:** (+33) 1 44 27 72 40
**E-Mail:** matthieu.micoulaut@gmail.com

### Pr. Yannick Klein

*Associate Professor of Physics at Sorbonne Université*
*Lecturer for "Newtonian Mechanics 101"*
*1st year course within the physics program*
**E-Mail:** yannick.klein@upmc.fr