

# HUGO DA CUNHA | Curriculum Vitæ

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## Today

I am a PhD Student at Institut Camille Jordan (Villeurbanne, Lyon, France), under the supervision of Marielle Simon and Clément Erignoux. I am also a Research Fellow at The University of Tokyo, collaborating with Makiko Sasada, thanks to the support of the Japan Society for the Promotion of Science.

My research interests lie in Probability Theory, and more specifically on scaling limits of Interacting Particle Systems and non-equilibrium Statistical Mechanics.

## EDUCATION

<b>PHD IN MATHEMATICS</b>	<b>2024 - Today</b> Institut Camille Jordan, Université Lyon 1, France
<b>LONG RESEARCH PROJECT (PLR)</b>	<b>2023-2024</b> École Normale Supérieure de Lyon, France
<b>SECOND YEAR OF MASTER'S DEGREE IN ADVANCED MATHEMATICS, PROBABILITY &amp; STATISTICS</b>	<b>2022-2023</b> École Normale Supérieure de Lyon, France
<b>FIRST YEAR OF MASTER'S DEGREE IN ADVANCED MATHEMATICS</b>	<b>2021-2022</b> École Normale Supérieure de Lyon, France
<b>BACHELOR'S DEGREE IN FUNDAMENTAL MATHEMATICS</b>	<b>2020-2021</b> École Normale Supérieure de Lyon, France
<b>CLASSES PRÉPARATOIRES AUX GRANDES ÉCOLES (CPGE) PCSI-PC*</b>	<b>2018-2020</b> Lycée Blaise Pascal, Clermont-Ferrand, France

## EXPERIENCE

<b>JSPS SUMMER PROGRAMME 2025</b> Research fellowship, hosted by <a href="#">Makiko Sasada</a>	<b>June – August 2025</b> The University of Tokyo, Japan
<b>RESEARCH INTERNSHIP</b> under the supervision of <a href="#">Marielle Simon</a> and <a href="#">Clément Erignoux</a>	<b>April – July 2024 and 2025</b> Université Lyon 1, France
<b>RESEARCH INTERNSHIP</b> Research visit, hosted by <a href="#">Lu Xu</a>	<b>October 2023 - March 2024</b> Gran Sasso Science Institute, L'Aquila, Italy
<b>RESEARCH INTERNSHIP</b> Research visit, hosted by <a href="#">Patrícia Gonçalves</a>	<b>May – July 2022</b> Instituto Superior Técnico, Lisbon, Portugal

## PUBLICATIONS

<b>"HYDRODYNAMIC LIMIT FOR AN OPEN FACILITATED EXCLUSION PROCESS WITH SLOW/FAST BOUNDARIES"</b> Hugo Da Cunha, Clément Erignoux and Marielle Simon Communications in Mathematical Physics, 407, 50	<b>2026</b> <a href="#">DOI</a> <a href="#">PDF</a>
<b>"COUPLING HYDRODYNAMICS OF SEVERAL FACILITATED EXCLUSION PROCESSES WITH CLOSED BOUNDARIES"</b> Hugo Da Cunha and Lu Xu accepted in the Springer Proceedings "From Particle Systems to Partial Differential Equations".	<b>2025</b> <a href="#">arXiv</a>

<b>OSAKA PROBABILITY SEMINAR</b>	<b>July, 2025</b> Osaka, Japan
<b>TOKYO PROBABILITY SEMINAR</b>	<b>July, 2025</b> Tokyo, Japan
<b>WINTER SCHOOL ON STATISTICAL MECHANICS, NONEQUILIBRIUM PROCESSES AND PROBABILITY</b>	<b>February, 2025</b> Rome, Italy
<b>YOUNG RESEARCHERS IN APPLIED MATHEMATICS CONGRESS</b>	<b>October 30th, 2024</b> Lyon, France
<b>ICJ/UMPA PHD STUDENTS SEMINAR</b>	<b>October 21st, 2024</b> Lyon, France
<b>SMAQ SEMINAR (STOCHASTIC MODELLING IN L'AQUILA)</b>	<b>March 18th, 2024</b> L'Aquila, Italy

 **PARTICIPATIONS TO CONFERENCES AND WORKSHOPS**

<b>INTERACTING PARTICLE SYSTEMS AND RELATED FIELDS</b> in the honor of Claudio Landim 60th birthday	<b>September 22nd – 26th, 2025</b> CIRM, Marseille, France
<b>EMERGENT PHENOMENA IN NON-EQUILIBRIUM STATISTICAL MECHANICS</b> Intensive thematic trimester	<b>April 28th – May 9th, 2025</b> L'Aquila, Italy
<b>PARTICLE SYSTEMS AND PARTIAL DIFFERENTIAL EQUATIONS (PSPDE)</b> Twelfth edition Presentation of a poster about the work done during the different research internships	<b>September 9th-13th, 2024</b> Trieste, Italy
<b>BRAZILIAN SCHOOL OF PROBABILITY</b> Twenty-seventh edition	<b>August 5th-9th, 2024</b> Salvador de Bahia, Brazil
<b>INTERACTIONS EDP/PROBABILITÉ :</b> Functional inequalities, optimal transport and particle systems	<b>January 22nd-26th, 2024</b> CIRM, Marseille, France
<b>SUMMER SCHOOL "SAMPLING HIGH-DIMENSIONAL PROBABILITY MEASURES:</b> applications in (non)equilibrium molecular dynamics and statistics"	<b>September 25th-27th, 2023</b> CERMICS, Marne-la-Vallée, France
<b>CONFERENCE ON STOCHASTIC PROCESSES AND THEIR APPLICATIONS (SPA)</b> Fortythird edition Participation to the organization of this event.	<b>July 24th-28th, 2023</b> Lisbon, Portugal
<b>27ÈMES RENCONTRES ITZYKSON</b> Fluctuations far from Equilibrium	<b>May 31st-June 2nd, 2023</b> Institut de Physique Théorique (IPHT), Gif-sur-Yvette, France
<b>WORKSHOP "ASYMMETRY IN INTERACTING PARTICLE SYSTEMS"</b> Microscopic and macroscopic effects	<b>October 3rd-5th, 2022</b> INRIA Lille, France
<b>PARTICLE SYSTEMS AND PARTIAL DIFFERENTIAL EQUATIONS (PSPDE)</b> Tenth edition	<b>June 27th-July 1st, 2022</b> Universidade do Minho, Braga, Portugal

 **OUTREACH ACTIVITIES**

<b>JOURNÉE MATHÀLYON</b> Intervention with middle school students to introduce mathematical research through hands-on activities and workshops	<b>October 8th, 2024</b> Collège Sonia Delaunay, Villefontaine
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## **TEACHING EXPERIENCES**

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### **TEACHING ACTIVITIES (64 HOURS)**

Exercise sessions of Statistics for 2nd-year students & Analysis for 1st-year students

**2025-2026**

Université Lyon 1

### **TEACHING ACTIVITIES (64 HOURS)**

Exercise sessions and oral examinations of Analysis and Algebra for 1st & 2nd-year students

**2024-2025**

Université Lyon 1

### **AUTHOR AT H&K PUBLISHING**

Writing of solutions for the 2024 competitive exams for preparatory classes (CPGE)

**May 2024**

### **"COLLEUR EN MATHÉMATIQUES"**

Weekly oral interrogations in Mathematics  
for students of "Classes préparatoires"

**September 2022 – June 2023**

Lycée aux Lazaristes-La Salle, Lyon, France

### **MOCK ORAL EXAMINATIONS OF MATHEMATICS**

for the preparation to competition  
of students of "Classes préparatoires"

**June 2023**

Lycée Blaise Pascal, Clermont-Ferrand, France

## **LANGUAGES**

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<b>FRENCH</b>	Native speaker
<b>ENGLISH</b>	Cambridge Advanced C1 Certification
<b>PORTUGUESE</b>	Fluent
<b>ITALIAN</b>	Intermediate
<b>SPANISH</b>	Intermediate

## **SOFTWARES**

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<b>L<sup>A</sup>T<sub>E</sub>X</b>	Fully proficient
<b>PYTHON</b>	Proficient

**Fields of interest** – Probability Theory, Statistical Mechanics, Partial Differential Equations