

Carmela Moschella | CV

Faculty of Mathematics, University of Vienna
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Research experience

- **PhD in Mathematics / SMICH Programme** **Vienna, Austria**
University of Vienna / Max Perutz Laboratory *Sep 2021 - Present*

I am a PhD student in Mathematics under the supervision of Sara Merino-Aceituno, Christian Schmeiser, and Christa Buecker, as part of the multidisciplinary SMICH PhD program within the Vienna BioCenter Graduate School and the Medical University of Vienna. My research focuses on kinetic theory and its applications to emergent phenomena in biology using partial differential equations, numerical simulations, and modeling. I am familiar with Boltzmann-type equations, Fokker-Planck equations, and coagulation equations.

Education

- **Master's degree in Applied Mathematics** **Rome, Italy**
Department of Mathematics, Sapienza - University of Rome *Sept 2017 - Jan 2020*

Thesis in Dynamical Systems: 110/110

Cucker-Smale model with repulsive forces.

Supervisor: Prof. Paolo Buttà

- **Bachelor's Degree in Mathematics** **Fisciano, Italy**
Department of Mathematics, University of Salerno *Sept 2014 - Sept 2017*

Thesis in Numerical Analysis: 106/110

Long-term dynamics of multistep linear methods for conservative processes.

Supervisor: Prof. Raffaele D'Ambrosio

- **Scientific High School Diploma** **Atripalda, Italy**
Scientific High School "V. De Caprariis" *Sept 2009 - Jun 2014*
National IT Plan (PNI). Rating: 89/100

Work experience

- **Software Developer Engineer (System Architect)** **Rome, Italy**
NTT Data *Feb 2020 - Aug 2021*

I developed and maintained a sales and post-sales platform using Pega, a Java-based low-code development platform. Key responsibilities included:

- **Back-end development:** Designed and implemented business logic, REST APIs, and data processing workflows, ensuring system scalability and maintainability.
- **Front-end development:** Developed and optimized UI components using Pega's front-end framework to enhance user experience and accessibility.
- **End-to-end testing:** Designed and executed automated and manual test cases to validate system functionality.
- **Client engagement & requirements analysis:** Acted as a bridge between business stakeholders and the development team, gathering requirements, analyzing business processes, and translating them into technical specifications.

Long research stays

- **Research visit at Université Paris Dauphine-PSL**
Hosted by Laura Kanzler **Paris, France**
1 May 2023 - 30 June 2023
- **Research visit at Université Paris Dauphine-PSL**
Hosted by Laura Kanzler **Paris, France**
1 Oct. 2023 - 31 Oct. 2023
- **Research visit at Université Paris Dauphine-PSL**
Hosted by Laura Kanzler **Paris, France**
6 May 2024 - 14 May 2024
- **Research visit at École polytechnique**
Hosted by Marie Doumic **Paris, France**
15 May 2024 - 7 June 2024
- **Research visit at École polytechnique**
Hosted by Marie Doumic **Paris, France**
30 Sep. 2024 - 30 Nov. 2024

Forthcoming publications

- **S. Merino-Aceituno and C. Moschella**, "Vicsek-Kuramoto model and its macroscopic equations".
- **L. Kanzler, C. Moschella, and C. Schmeiser**, "First order non-instantaneous corrections in collisional kinetic alignment models".
- **S. Merino-Aceituno, C. Moschella, S. Otsuka, and C. Schmeiser**, "Protein transport between the endoplasmic reticulum and the nuclear envelope".
- **Delacour, M. Doumic, C. Moschella, and C. Schmeiser**, "On existence of steady-state solutions to a Transport-Coagulation-Nucleation equation".

Conferences and Talk/Poster Presentations

- **RSME's 7th Congress of Young Researchers**, Bilbao, Spain. January 2025.
+ **Invited speaker**
- **EWM-EMS Summer School: Kinetic Theory Arising from Mathematical Biology**, Institut Mittag-Leffler, Djursholm (Sweden). July 2024.
+ **Invited speaker**
- **Workshop in Mathematical modeling in life and health sciences**, Wolfgang Pauli Institute, Vienna (Austria). July 2024.
+ **Invited speaker**
- **MMEE2024 Mathematical Models in Ecology and Evolution**, Minisymposium *Self-organisation in systems of interacting agents*, Vienna (Austria). July 2024.
+ **Invited speaker**
- **Aggregation-Diffusion Equations and Collective Behavior: Analysis, Numerics and Applications**, CIRM, Marseille (France). April 2024.
+ **Poster presentation**
- **Bio - PDE Days Vienna**, TU Wien, Vienna (Austria). February 2024.
+ **Poster presentation**
- **OKO International Symposium 2023**, Kyoto (Japan). August 2023.
+ **Poster presentation**
- **ICIAM 2023**, Minisymposium *Mathematical biology*, Tokyo (Japan). August 2023.
+ **Contributed talk**

- **Workshop in Asymptotic Behaviors of systems of PDEs arising in physics and biology - 5th edition**, Polytech Lille, Lille (France). June 2023.
+ **Contributed talk**

Seminars

- **University of Vienna – Kyoto University Strategic Partnership Symposium 2024**, University of Vienna, Vienna (Austria). June 2024 - **Invited**
- **Séminaire des jeunes chercheurs**, Université Paris Dauphine-PSL, Paris (France). June 2023 - **Invited**
- **PDE Afternoon**, University of Vienna, Vienna (Austria).
- **WiP, SMICH seminar** Vienna BioCenter, Vienna (Austria).

Academic Events & Outreach

- **Lange Nacht der Forschung 2024**, University of Vienna – Co-organizer for Biomathematics Station

I participated in organizing and presenting a station on biomathematics at Austria's largest science outreach event, engaging the public with interactive demonstrations on mathematical modeling in biology. More details available at the following [link](#).

Language skills

- **Italian**: Mother tongue
- **English**: Proficient
- **French**: Intermediate
- **German**: Basic

Computer skills

Julia, Matlab, Python, C, Github, Latex, Pega (Java-based platform).

References

PhD Supervisors:

Sara Merino-Aceituno, sara.merino@univie.ac.at

Christian Schmeiser, Christian.Schmeiser@univie.ac.at