



Alberto Gubbiotti
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Alberto Gubbiotti

About me At the present, I am a postdoctoral researcher at Sapienza University of Rome, I work on mesoscale models for the transport of ions across biological channels. My research interests include the computational study of micro/nanofluidic systems with biotechnological applications in the field of single-molecule sensors. Specifically, during my PhD I worked on mesoscale (coarse-grained) models for particle diffusion in nanofluidic systems and for the modelling of coupled fluid and ionic dynamics.

Research

December 2019 - to the date, La Sapienza Università di Roma

- Postdoctoral researcher, research project titled "Micro and mesoscale models of ion gating in cells and nanofluidic circuits"

Teaching

2021, Temple University Rome Campus

- Teaching Assistant for the course "Mechanics of solids"

2020, Temple University Rome Campus

- Teaching Assistant for the course "Mechanics of solids"

2019, Temple University Rome Campus

- Teaching Assistant for the course "Engineering Dynamics"
- Teaching Assistant for the course "Mechanics of Solids"

Education

2016-2020, La Sapienza Università di Roma - Dipartimento di Ingegneria Meccanica e Aerospaziale

PhD in Theoretical and Applied Mechanics. Thesis titled "Coarse Grained modelling of nanopore systems."

2013-2016, La Sapienza Università di Roma

Master degree in Nanotechnology Engineering, full mark with honors, thesis titled "Molecule capture and trapping in a nanopore sensor".

2009-2013, La Sapienza Università di Roma

Bachelor degree in Aerospace Engineering.

Other courses

May 2019, Politecnico di Torino

Course "The theory of Coarse-Graining and its applications towards the modeling of complex fluids"

May 2018, CINECA, Roma

Course "Introduction to Parallel Computing with MPI and OpenMP"

May 2017, CINECA, Roma

Course "Introduction to Scientific and Technical computing in C"

March 2017, CINECA, Roma

Course "Introduction to modern Fortran"



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Publications

2021

- Gubbiotti, A., Chinappi, M., Casciola, C.M. EH-DPD: a Dissipative Particle Dynamics approach to Electro-Hydrodynamics, in preparation.

2020

- Giambianco, N., Gubbiotti, A., Chinappi, M. and Balme, S., Nanopore Study of food amyloid protein digestion. *Small Methods*.

2019

- Gubbiotti, A., Chinappi, M., Casciola, C.M. (2019). Confinement effects on the dynamics of a rigid particle in a nanochannel. *Physical Review E*.

2018

- Giambianco, N., Coglitore, D., Gubbiotti, A., Ma, T., Balanzat, E., Janot, J. M., ... & Balme, S. (2018). Amyloid Growth, Inhibition, and Real-Time Enzymatic Degradation Revealed with Single Conical Nanopore. *Analytical chemistry*.

2017

- Watanabe, H., Gubbiotti, A., Chinappi, M., Takai, N., Tanaka, K., Tsumoto, K., & Kawano, R. (2017). Analysis of Pore Formation and Protein Translocation Using Large Biological Nanopores. *Analytical chemistry*, 89(21), 11269-11277.

Conferences & Workshops

2021

- Talk "Dissipative Particle Dynamics with fluctuating charge to study mesoscale electrohydrodynamic phenomena", American Physical Society March Meeting 2021, online, March 2021

2020

- Talk "Dissipative Particle Dynamics with fluctuating charge to study mesoscale electrohydrodynamic phenomena", Discrete Simulations of Fluid Dynamics 2020 conference, online, July 2020

2019

- Talk "Particle Dynamics in nanopore systems via Brownian Dynamics simulations", presented at the "French-Italian workshop : Single Nanopore for Sensing and Energy" Montpellier (France), July 2019

2018

- Poster "Effects of confinement on the diffusive transport of a spherical particle in a nanochannel" presented at the conference "Nanofluidics in Physics and Biology", Lyon (France), July 2018
- Talk "Particle diffusion in confined environment: A rigid body Langevin approach" presented at the "European Fluid Mechanics Conference", Vienna (Austria), September 2018
- Talk "Ions and particles transport in nanopores: reduced models and coarse grained descriptions" presented at the "Tor Vergata nanopore sensing meeting", Rome (Italy), December 2018

2017

- Poster "Coarse grained simulations of nanopore systems" presented at the conference "Nanopore", Bremen (Germany), July 2017



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Computer skills

Working experience in Linux environment

Working experience in HPC environment

Computer Programming

- C++
- Fortran
- Python
- Tcl
- oMP
- MPI

Scientific software

- Matlab/Octave
- LAMMPS
- VMD
- Mathematica
- R

Awards & Grants

2019, ISCRA C, CINECA

400000 core hours assigned on the machine "Marconi" for the project "Electrohydrodynamics via Dissipative Particle Dynamics".

2018, Avvio alla ricerca, La Sapienza Università di Roma

Awarded 1000 € of support for the project "Electrohydrodynamic effects in microfluidics: a Dissipative Particle Dynamics approach".

2017, ISCRA C, CINECA

100000 core hours assigned on the machine "Marconi" for the project "Dissipative Particle Dynamics simulations of confined colloids".

Languages spoken

Italian

English

Spanish