Christian Vanhille Campos

vanhillechristian@gmail.com — Christian Vanhille Campos — cvanhille — Google Scholar

Summary — PhD in Computational Theoretical Physics — Expert in Computational Modelling of Complex Systems — Interested in applying my technical expertise to social impact and innovation

Education

PhD in Computational Theoretical Biophysics **Jan 2020 - Sep 2024**
University College London *London, UK*

- Model development
- Software development
- Large-scale computer simulations
- Data analysis and management
- Interdisciplinary project lead
- Junior scientist mentoring

Master in Physics of Complex Systems **Sep 2018 - Jul 2019**
Université Paris Diderot *Paris, France*

- Stochastic Processes
- Statistical Physics
- Nonlinear Dynamics
- Machine Learning and Big Data
- Biophysics
- Social Physics

Bachelor in Physics **Sep 2014 - Jul 2018**
Universidad Complutense de Madrid *Madrid, Spain*

Technical Skills

Modelling Molecular Dynamics, ABMs, Nonlinear Systems, Markov Chain, Gillespie, Monte Carlo, Bayesian inference...
Python Expert in: Model solution; Data analysis (pandas, numpy, sk-learn...); Visualisation
C#/C++ Software development and customisation for modelling applications
LAMMPS Simulation of complex many-body out-of-equilibrium systems
bash/SLURM Large scale parallel and distributed computer simulations
git Code management and version control; Software project contributions
conda/pip Package and version control; Virtual environments
Ovito System visualisation and rendering (images, figures)
COMSOL MP Simulation of complex geometry physical systems
Matlab Data analysis and simulation
LaTeX Typesetting scientific literature in a high-level publishing environment
Keynote/PPT Scientific presentations, Workshops, Discussions, Accessible Visual Data, Animations
Inkscape Visual scientific content (posters, figures, illustrations, etc.)
Other Jupyter Notebooks, Microsoft Office, Microsoft Teams, Zoom, Slack, Linux, MacOS

Relevant Experience

Predoctoral Visiting Scientist **Jan 2022 – Sep 2024**
Institute of Science and Technology Austria *Vienna, Austria*

- Completed the last two years of my PhD Studentship as a visiting scientist at ISTA, Vienna
- Successfully led interdisciplinary projects integrating experiments and theory across diverse scientific fields
- Delivered scientific presentations, including talks and posters, at over eight international conferences and workshops
- Published eight scientific articles in high-impact peer-reviewed journals such as *Nature*, *Nature Physics* or *PNAS*

PhD Studentship **Jan 2020 – Sep 2024**
University College London *London, UK*

- Developed models to unravel the physical mechanisms underlying molecular function in multiple biological processes
- Mentored and supervised several junior members of the research group
- Organised team-building activities in the group (workshops, day trips, retreats...)

Research Assistant **Jul 2018 – Jul 2019**
Brunel University *London, UK*

- Incorporated food security considerations into agent-based models of refugee movement in response to conflict
- Acquired, analysed and combined data from different sources into suitable model variables
- Participated in interdisciplinary meetings with charities and international organisations to apply the developed models
- Contributed a poster and scientific publication to an international conference on Computer Science

Relevant Publications

- **C. Vanhille-Campos**, M. Muñoz-Basagoiti, M. Krstić, A. Šarić*, *Design principles of self-assembling cytomotive monomers: a new class of synthetic machinery*, in preparation (2024)
- **C. Vanhille-Campos**, K. D. Whitley, P. Radler, M. Loose, S. Holden, A. Šarić*, *Self-organization of mortal filaments and its role in bacterial division ring formation*, Nature Physics (2024)
- C. Bussi, A. Mangiarotti, **C. Vanhille-Campos**, B. Aylan, E. Pellegrino, N. Athanasiadi, A. Fearns, A. Rodgers, T. M. Franzmann, A. Šarić, R. Dimova, M. G. Gutierrez*, *Stress granules plug and stabilize damaged endolysosomal membranes*, Nature (2023)
- X. Jiang, L. Harker-Kirschneck, **C. Vanhille-Campos**, A. K. Pfitzner, E. Lominadze, A. Roux, B. Baum, A. Šarić*, *Modelling membrane reshaping by staged polymerization of ESCRT-III filaments*, PLOS Computational Biology (2022)
- L. Harker-Kirschneck, A. E. Hafner, T. Y. Yao, A. Pulschen, F. Hurtig, **C. Vanhille-Campos**, D. Hryniuk, S. Culley, R. Henriques, B. Baum, A. Šarić*, *Physical mechanism of ESCRT-III-driven cell division*, PNAS (2022)
- A. Paraschiv, T. J. Lagny, E. Coudrier, **C. Vanhille-Campos**, P. Bassereau, A. Šarić*, *Influence of membrane-cortex linkers on the extrusion of membrane tubes*, Biophys J 120, 598 (2021)
- **C. Vanhille-Campos**, A. Šarić*, *Modelling the dynamics of vesicle reshaping and scission under osmotic shocks*, Soft Matter (2021)
- C. M. Barriuso Gutiérrez, **C. Vanhille-Campos**, F. Alarcón, I. Pagonabarraga, R. Brito, C. Valeriani*, *Collective motion of run-and-tumble repulsive and attractive particles in one-dimensional systems*, Soft Matter (2021)
- **C. Vanhille-Campos**, D. Suleimenova, D. Groen*, *A coupled food security and refugee movement model for the South Sudan conflict*, ICCS (2019)

Relevant Conferences and Workshops

- Fellowship to attend the 2024 Boulder School of Soft Matter "Self-organizing matter: from inanimate to the animate" (July 2024 – Boulder, CO, USA)
- Poster presentation at the CECAM workshop "Modeling energy-consuming biomolecular processes" (January 2024 – Lausanne, Switzerland)
- Poster presentation at the International Soft Matter Conference (September 2023 – Osaka, Japan)
- Scientific talk at the EMBO workshop "Cell polarity and membrane dynamics" (May 2023 – St Feliu de Guixols, Spain)
- Scientific talk at the EMBO workshop "Bacterial cell biophysics" (December 2022 – Ein Gedi, Israel)
- Poster presentation at the conference "Biomembrane days 2022" (September 2022 – Berlin, Germany)
- Poster presentation at the EMBO workshop "Physics of Cell" (September 2022 – Ein Gedi, Israel)
- Poster presentation at the workshop "Physics of Life Summer School 2022" (April 2022 – Edinburgh, UK)

Languages

Spanish Mother tongue **French** Mother tongue **English** Bilingual (C2) **German** Basic skills (A1/A2)