Curriculum Vitae

Name:	Rémy Kusters
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Summary

Research fellow and group leader in physics inspired machine learning. PhD in theoretical/ computational physics with expertise in biophysics, self organisation and soft matter physics. Our research group explores how concepts from physics can enhance machine learning algorithms and how quantitative sciences can benefit from advances in machine learning.

Work experience

2018-present

Research fellow and group leader at CRI, Paris, France,
Leading a research group on Physics Inspired Machine Learning (PhIMal team) working on the intersection between machine learning (deep neural networks) and theoretical physics. Currently supervising circa four PhD/engineers and undergrad students.

2016-2018

Postdoctoral fellow at Institut Curie, Paris, France
Researcher in theoretical and computational biophysicis within an interdisciplinary team of cell biologists/experimental biophysicists. Areas of research: membrane dynamics, polymer physics, active gel theory, hydrodynamics and microfluidics.
Reference: Prof. J-F. Joanny (ESPCI)
dr. P. Sens (Institut Curie)

2017-Present

Lecturer biophysics at CRI, Paris, France
Designing and teaching an introductory course of biophysics for first year graduate students with an interdisciplinary background.

9/2014 – 12/2014
9/2015 – 11/2015

Research visit at Harvard University, Boston, United States
Visit of the Mahadevan lab at the School for Engineering and Applied Science (SEAS), studying the pattern formation in layered elastic material and elastohydrodynamic transportation of capsules through microfluidic channels.
Reference: Prof. L. Mahadevan (Harvard University)

Education:

2012-2016:

PhD at Eindhoven University of Technology, The Netherlands
Barriers in the brain: molecular mechanisms behind learning and memory
Unraveling the physical mechanisms of synaptic strength regulation in the brain using stochastic modelling of receptors, molecular dynamics, membrane dynamics and hydrodynamic modelling. I initiated multiple side projects on pattern formation, leading to 10+ peer reviewed publications among which one last author computational methods paper in *Biophys. J. (featuring on the journals cover)*.

Degree obtained with honours **Cum Laude** (top 2.9% of all PhD at TU/e are honoured with title)
Reference: Prof. C. Storm (TU/e)

5/2011-8/2011	**MSc. exchange visit at École Polytechnique Fedérale de Lausanne**, Switzerland Performing research in the group of Prof. R. Gruetter and dr. W. van der Zwaag. Mapping the the somatotopy arrangement of the hand and fingers in the human cerebellum with 7T fMRI, leading to reseach paper in NeuroImage (final grade: 9.0/10). Reference: Dr. W. van der Zwaag (Spinoza Centre for Neuroimage)
2007-2012	**MSc. and BSc. of Science in Applied Physics**, Eindhoven University of Technology, The Netherlands **Master thesis** on modelling the self assembly of viral coat proteins around gold nanoparticles (grade: 8.5/10). Reference: Prof. Dr. Ir. P. van der Schoot (TU/e) **Bachelor thesis** on the tank-treading motion of red blood cells in a sheared flow (final grade: 9.0/10). Reference: Prof. Dr. J. Harting (TU/e)
2009-2011	**Member in the Board of Education Applied Physics**, Eindhoven University of Technology, The Netherlands, Elected student member responsible for evaluating and assessing the educational program of the applied physics division.
2008-2009	**Board member** of the Board of Students of Technology (BEST), Eindhoven, The Netherlands, Responsible for the PR and HR of an association organising courses for students all around Europe (76 Local groups).

Computational skills

Programming languages: Experienced in Mathematica, Python and Matlab; Limited experience in C and Julia.
Computational tools: Tensorflow, Pytorch, LAMMPS (Molecular dynamics software), Several Lattice Boltzmann and FEM packages.
Graphical design: Adobe creative cloud, Latex.

Awards

2017	Winner: Best PhD thesis (2016) of Applied Physics at TU/Eindhoven. Nominated for best PhD thesis (2016) at TU/Eindhoven.
2015	Travel grant Harvard University for extended research visit.
2014	Travel grant Vereniging voor Biofysica en Biomedische Technology.
2014	Winner: ASML Young Speakers Contest.
2013	Winner: Poster award at the Annual European Biophysical Society Meeting, Lisbon.

Additional information

Languages: Dutch, French and English - fluent.
Personal interests: Cycling, running and triathlon races (long distances); Reading (history, science/technology).

List of Publications attached as separate document.