

Amir Khosravanizadeh

Institute Jacques Monod (IJM) – University De Paris / CNRS
Cellular Spatial Organization group

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Education and Research

- **2021-now:** **Postdoc**, Cellular Spatial Organization group, IJM, Paris, France
Project Role of Actin Chirality in Self-Organizing Systems
Supervisor Dr. Serge Dmitrieff
- **2019:** 6 Months **Visiting Fellowship**, Department of Living Matter Physics, MPIDS, Göttingen, Germany
Project Microtubule-Kinesin Active Network
Supervisors Prof. Dr. Ramin Golestanian and Dr. Andrej Vilfan
- **2013-2020:** **Ph.D.** in Physics-Soft Condensed Matter, IASBS, Zanjan, Iran
Thesis Elastic Deformations of a Cellular Membrane upon an External Object
Supervisor Dr. Farshid Mohammad-Rafiee
Advisor Prof. Dr. Pierre Sens
- **2010-2013:** **M.Sc.** in Physics-Condensed Matter, IASBS, Zanjan, Iran
Thesis Liquid Crystal Phases in Solution of Rod-Like Molecules Containing Electric Dipole Moment: Molecular Dynamics Simulation
Supervisor Prof. Hossein Fazli
Advisor Dr. Sarah Mohammadinejad
- **2006-2010:** **B.S.** in Applied Physics, Razi University, Kermanshah, Iran



Research Interests

- ❖ Molecular Modeling of Biological Systems
- ❖ Physics of Lipid Membranes
- ❖ Biological Complex Systems
- ❖ Self-assembly of Biological Macromolecules
- ❖ Motor Proteins and Cytoskeleton Filaments
- ❖ Active Matter



Research Areas

- ❖ Soft Matter
- ❖ Biophysics
- ❖ Computational Physics
- ❖ Polymer Physics



Publications

- ❖ A. Khosravanizadeh, P. Sens, and F. Mohammad-Rafiee, “**Wrapping of a nanowire by a supported lipid membrane**”, *Soft Matter*, **15**: 7490, 2019.
- ❖ T. Strübing, A. Khosravanizadeh, A. Vilfan, E. Bodenschatz, R. Golestanian, and I. Guido, “**Wrinkling instability in 3D active nematics**”, *Nano Letters*, **20**: 6281, 2020.
- ❖ A. Khosravanizadeh, P. Sens, and F. Mohammad-Rafiee, “**Membrane wrapping of elastic nanoparticles in the presence of cytoskeleton**”, *Preprint*.
- ❖ A. Khosravanizadeh, P. Sens, and F. Mohammad-Rafiee, “**Role of particle local curvature in cellular wrapping**”, *Preprint*.
- ❖ S. Rahbar, A. Khosravanizadeh, and F. Mohammad-Rafiee “**Entropic forces acting on a hard-flat wall by a grafted F-actin**”, *Preprint*.



Computer Skills

- ❖ **Operating systems:** Windows, Linux
- ❖ **High performance computing:** OpenMP, MPI, CUDA
- ❖ **Programming languages:** Fortran, C/C++, Bash-Scripting, Tcl, Python
- ❖ **Plot and data analysis software:** Origin, Gnuplot, Matlab
- ❖ **Polymer software:** Espresso, VMD, Gromacs, Cytosim
- ❖ Molecular Dynamics and Monte Carlo Simulations Methods



Honors and Awards

- **2010- 2013** First Ranked Student in M.Sc.
- **2006- 2010** First Ranked Student in B.S.



Advising and Teaching Assistant

- ❖ Adviser of a Master Student, the project titled “**Simulation of the Entropic Force Exerted on a Flat Wall by a Semiflexible Polymer Chain using Molecular Dynamics Method**”
- ❖ Teaching Assistant in Biological Physics Course: “Biological Physics of the Cell”, Rob Philips et al, Department of Physics and Department of Biological Sciences (**Autumn 2013, Winter 2013, Autumn 2015, Winter 2017**)
- ❖ Teaching Assistant in Computational Physics Course, Department of Physics (**Spring 2014**)



Talk and Poster Presentation

- ❖ A. Khosravanizadeh, S. Dmitrieff, “**A Coarse-Grained Model for Helical Actin Filaments**”, 4th Course on Multiscale Integration in Biological Systems, Institute Curie, Paris, France, November, 4-10.
- ❖ A. Khosravanizadeh, P. Sens, F. Mohammad-Rafiee, “**Wrapping a Cylindrical Nanoparticle in the Presence of Cytoskeleton Substrate**”, Transport Phenomena in Complex Environments Erice, Italy, September 3-6, 2019
- ❖ A. Khosravanizadeh, P. Sens, F. Mohammad-Rafiee, “**2D coarse grained membrane model: molecular dynamics simulation**”, 24th Annual IASBS Meeting on Condensed Matter Physics and School on Complex Systems, IASBS, Iran, June 20-22, 2018
- ❖ A. Khosravanizadeh, P. Sens, F. Mohammad-Rafiee, “**Elastic Deformations of a Cellular Membrane upon a Cylindrical Nanoparticle**”, 23rd Annual IASBS Meeting on Condensed Matter Physics and School on Topological Phases of Matter, IASBS, Iran, May 17-19, 2017 ([Selected Poster](#))
- ❖ A. Khosravanizadeh, S. Mohammadinejad, H. Fazli, Poster Presentation, “**Simulation of Liquid Crystal Phases in Solution of Rod-Like Molecules Containing Electric Dipole Moment**”, IASBS-ICTP School on Active Matter and Chemotaxis, IASBS, Iran, May 14-25, 2016
- ❖ A. Khosravanizadeh, S. Mohammadinejad, H. Fazli, “**Simulation of Liquid Crystal Phases in Solution of Rod-Like Molecules Containing Electric Dipole Moment**”, 2nd IPM Conference on Soft Matter, Biological and Statistical Physics, IPM, Iran, October 25, 2013 ([Selected Poster](#))
- ❖ A. Khosravanizadeh, S. Mohammadinejad, H. Fazli, “**Orientational Ordering of Rod-Like Macromolecules with Dipole Interaction: Molecular Dynamics Simulation**” The 11th Condensed Matter Physics Conference of Iran, Shahrood University of Technology, Iran, Jun 26-27, 2012



Language Skills

- ❖ Persian (Native)
- ❖ English (Fluent)



Selected Attended Advanced Courses

- ❖ **Biological Physics of the Cell** (Rob Philips et al.)
- ❖ **Soft Condensed Matter** (Richard Jones)
- ❖ **Computational Physics I-II**
- ❖ **Advanced Computational Physics I-II**
- ❖ **Polymer Physics** (Rubinstein & Colby)
- ❖ **Physical Hydrodynamics** (Guyon et al.)



Attended Conferences and Seminars

- ❖ **2022:** AQV Days: Quantitative Approaches to living systems, IJM, Paris, January, 19-21.
- ❖ **2021:** 4th Course on Multiscale Integration in Biological Systems, Institute Curie, Paris, France, November, 4-10.
- ❖ **2019:** Workshop on Active, Charged, and Magnetic Soft Matter Simulations with ESPResSo, Stuttgart, Germany, October, 7-11
- ❖ **2019:** Conference of Transport Phenomena in Complex Environments Erice, Italy, September 3-6
- ❖ **2018:** 24th Annual IASBS Meeting on Condensed Matter Physics and School on Complex Systems, IASBS, June 20-22
- ❖ **2018:** 6th Workshop on Collaborative Scientific Software Development and Management of Open Source Scientific Packages, Sharif University, Tehran, Iran, 28 April – 9 May
- ❖ **2017:** The 23rd Annual IASBS Meeting on Condensed Matter Physics and School on Topological Phases of Matter, IASBS, May 17-19
- ❖ **2016:** The 22nd Meeting on Condensed Matter Physics, IASBS, May 26-27
- ❖ **2016:** IASBS-ICTP School on Active Matter and Chemotaxis, IASBS, May 14-25
- ❖ **2015:** The 21st Meeting on Condensed Matter Physics and School on Complex Fluids, IASBS, May 27-29
- ❖ **2014:** The 20th Meeting on Condensed Matter Physics & School on Soft Matter and Biological Physics, IASBS, May 28-30
- ❖ **2013:** The 2nd IPM Conference on Soft Matter, Biological & Statistical Physics and School on Polymer Physics, IPM, Tehran, Iran, October 25-26
- ❖ **2012:** The 18th Meeting on Condensed Matter Physics, IASBS, May 24-25
- ❖ **2012:** The 11th condensed matter physics conference of Iran, Shahrood University of Technology, Shahrood, Iran, Jun 26-27
- ❖ **2011:** The 17th Meeting on Condensed Matter Physics, IASBS, May 26-27



References

- ❖ Dr. Serge Dmitrieff; IJM, Cellular Spatial Organization group, Paris, France
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- ❖ Dr. Farshid Mohammad-Rafiee; IASBS, Department of Physics, Zanjan, Iran
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- ❖ Dr. Andrej Vilfan; MPIDS, Living Matter Physics Department, Göttingen, Germany
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- ❖ Prof. Ramin Golestanian; MPIDS, Living Matter Physics Department, Göttingen, Germany
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- ❖ Prof. Pierre Sens; Institut Curie, PSL Research University, Paris, France
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