

# Curriculum Vitae

Saeed Najafi

---

## Education

2014 — 2017 **Ph.D. Physics** - Soft Condensed Matter  
Max Planck Institute for Polymer Research, Mainz, Germany.  
**supervisor:** Dr. Raffaello Potestio

**Max Planck Institute for  
Polymer Research**  
Adress: Ackermannweg 10,  
55128 Mainz, Germany.

2011 — 2013 **M.Sc. Physics** - Soft Condensed Matter  
Department of Physics, Institute for Advanced Studies in Basic Science  
Zanjan, Iran.  
**supervisor:** Dr. Farshid Mohammad Rafiee

Email:  
[najafi@mpip-mainz.mpg.de](mailto:najafi@mpip-mainz.mpg.de)  
Phone:  
+49 6131 379 328

2007 — 2011 **B.Sc. Physics**  
Qazvin International University, Qazvin, Iran.

## Research Experience and Interest

- **Max Planck Institute for Polymer Research, Mainz, Germany.**

*My research at MPIP focused mainly on Topology in DNA and Proteins:*

- We tried to understand the mechanisms of knots interactions and knot occurrence in biopolymers.
- We probed the structural and dynamical properties of braids of entwined DNA rings that include topological constrains.
- We shed light on the relation between the topology of the knotted proteins and their sequential information.

**Thesis:** The Dynamics and Statistics of Knots in bio-Polymers

- **Other interest:** DNA en/e-jection, Polymer Translocation, Swimmers, Capsid.

- **Institute for Advanced Studies in Basic Science (IASBS), Zanjan, Iran.**

- Adhesion of biopolymers (DNA) and bio-surfaces (membranes).
- Elasticity of Polymers and Membranes.

**Thesis:** Study of Elastic Deformation of a Membrane Adhering to a bio-Surface and a Cylindrical object.

# Curriculum Vitae

---

## Computing Skills

Molecular Simulations	Programing	Visualization
Molecular Dynamics (LAMMPS, ESPResSo++ and In-House code)	C / C++ Python Matlab / Mathematica	VMD Xmgrace GNUPlot
Monte Carlo (LAMMPS)	Unix Shell Scripting	Inkscape

## Publications

- **Saeed Najafi** and Raffaello Potestio “Two Adhesive Sites Can Enhance the Knotting Probability of DNA” *PLoS ONE* (2015) 10(7):e0132132
- **Saeed Najafi** and Raffaello Potestio “Folding of small knotted proteins: Insights from a mean field coarse-grained model” *The Journal of Chemical Physics* (2015) 143(24):243121
- **Saeed Najafi**, Luca Tubiana, Rudolf Podgornik, and Raffaello Potestio “Chirality modifies the interaction between knots” *EPL (Europhysics Letters)* (2016) 114(5)
- **Saeed Najafi**, Rudolf Podgornik, Raffaello Potestio, and Luca Tubiana “Role of Bending Energy and Knot Chirality in Knot Distribution and Their Effective Interaction along Stretched Semiflexible Polymers” *Polymers* (2016) 8(10):347
- **Saeed Najafi** and Raffaello Potestio “Entanglement of knotted DNA ring and an entwined DNA loop” *In preparation*.

# Curriculum Vitae

---

## Teaching Experience

- *Johannes Gutenberg-University Mainz*: Institute of Physics, Quantum Mechanics, 2015-2016.
- *Johannes Gutenberg-University Mainz*: Institute of Physics, Computer Simulation in Statistical Physics, 2015-2016.
- *Johannes Gutenberg-University Mainz*: Institute of Physics, Statistical Physics, 2016-2017.

## Funding and Awards

- **Max Planck Institute for Polymer Research:**  
IMPRS Doctoral Fellowship.
- **Institute for Advanced Studies in Basic Science (IASBS):**  
Torkaman Award (stipend supplement), 2013.

## References

- Dr. Raffaello Potestio  
email: [potestio@mpip-mainz.mpg.de](mailto:potestio@mpip-mainz.mpg.de)
- Prof. Kurt Kremer  
email: [kremer@mpip-mainz.mpg.de](mailto:kremer@mpip-mainz.mpg.de)
- Dr. Farshid Mohammad-Rafiee  
email: [farshid@iasbs.ac.ir](mailto:farshid@iasbs.ac.ir)