

CURRICULUM VITAE

Name and surname	Luka Mesarec
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Education

2013-2018 **PhD** in Physics: Faculty of Natural Sciences and Mathematics, University of Maribor, Slovenia. Thesis: "Impact of curvature on nematic topological defects."

2013-2017 **PhD** in Nanoscience: Biotechnical Faculty, University of Ljubljana, Slovenia. Thesis: "Stability of membrane nanostructures."

2011-2013 **MSc** in Physics: Faculty of Natural Sciences and Mathematics, University of Maribor, Slovenia.

2008-2011 **BSc** in Physics: Faculty of Natural Sciences and Mathematics, University of Maribor, Slovenia.

Professional career

2018-after date Assistant with PhD, Faculty of Electrical Engineering, University of Ljubljana, Slovenia.

2017-2018 Assistant Researcher, Faculty of Electrical Engineering, University of Ljubljana, Slovenia.

2013-2017 Young Researcher, Faculty of Electrical Engineering, University of Ljubljana, Slovenia.

Research interests

Equilibrium shapes of biological membranes; orientational ordering in biological membranes and liquid-crystalline shells; topological defects; theoretical modelling and simulations.

Theoretical methods

Finding equilibrium 2D closed shapes and orientational ordering configurations on these shapes by minimizing numerically the energy density functionals predicted by different theoretical models. Methods used: Monte Carlo method, numerical minimization of the function of many variables, standard over-relaxation method.

Enrollment in education

Assistant for the subjects Mechanics and Thermodynamics, Mechanics and Heat, Atomics and Optics on the Faculty of Electrical Engineering at the University of Ljubljana.

Selected publications:

- **MESAREC, Luka**, GÓŹDŹ, Wojciech, KRALJ-IGLIČ, Veronika, KRALJ, Samo, IGLIČ, Aleš. Coupling of nematic in-plane orientational ordering and equilibrium shapes of closed flexible nematic shells. Scientific reports. 2023, vol. 13(1), 19742.
- **MESAREC, Luka**, GÓŹDŹ, Wojciech, IGLIČ, Aleš, KRALJ-IGLIČ, Veronika, VIRGA, Epifanio G., KRALJ, Samo. Normal red blood cells' shape stabilized by membrane's in-plane ordering. Scientific reports. 2019, vol. 9, 19742.
- **MESAREC, Luka**, DRAB, Mitja, PENIČ, Samo, KRALJ-IGLIČ, Veronika, IGLIČ, Aleš. On the role of curved membrane nanodomains, and passive and active skeleton forces in the determination of cell shape and membrane budding. International journal of molecular sciences. 2021, iss. 5, 2348.
- **MESAREC, Luka**, GÓŹDŹ, Wojciech, KRALJ-IGLIČ, Veronika, KRALJ, Samo, IGLIČ, Aleš. Closed membrane shapes with attached BAR domains subject to external force of actin filaments. Colloids and surfaces. B, Biointerfaces. 2016, 141.