Curriculum Vitæ

Francesco Serafin

Email: fse@umich.edu

Department of Physics
University of Michigan
450 Church St.
Ann Arbor, MI 48109 USA

Research Interests

Geometry and topology in soft matter. Membranes, topological defects, emergence of shape. Geometrically frustrated self-assembly. Bulk-boundary correspondence in soft matter and mechanical metamaterials.

Education

2019-present

Postdoctoral Fellow, University of Michigan, Ann Arbor (MI).

Advisors: Prof. Xiaoming Mao, Prof. Kai Sun

2019 Ph.D. in Physics, Syracuse University (NY).

Advisor: Prof. Mark J. Bowick

2014 M.S. *cum laude* in Theoretical Physics, Università degli Studi di Trieste, Italy.

Advisor: Prof. Ennio Gozzi

2011 B.Sc. in Physics, Università degli Studi di Trieste, Italy.

Advisor: Prof. Ennio Gozzi

Professional Experience

Fall 2018 Affiliate Student at KITP, Santa Barbara (CA)

Fall 2017 Affiliate Student at KITP, Santa Barbara (CA)

Fall 2016 Affiliate Student at KITP, Santa Barbara (CA)

Publications

4. **F. Serafin**, Jun Lu, Nicholas Kotov, Kai Sun, Xiaoming Mao, *Frustrated self-assembly of non-Euclidean crystals of nanoparticles.* Nature Communications **12**, 4925 (2021)

3. Benjamin Loewe*, **F. Serafin***, Suraj Shankar*, Mark J. Bowick, M. C. Marchetti, *Shape and size changes of adherent elastic epithelia.* Soft Matter **16**, 5282-5293 (2020)

2. **F. Serafin**, Mark J. Bowick, Sidney R. Nagel, *Topology and ground state degeneracy of tetrahedral smectic vesicles.* Eur. Phys. J. E **41**, 143 (2018) – Selected as EPJe highlight article.

1. Mark J. Bowick, Oksana V. Manyuhina, **F. Serafin**, *Shapes and singularities in triatic liquid-crystal vesicles.* Europhysics Letters **117**, 26001 (2017)

*equal contribution.

Accepted for publication

1. Nan Cheng, **F. Serafin**, James McInerney, Zeb Rocklin, Kai Sun, Xiaoming Mao, *Band theory and boundary modes of high-dimensional representations of infinite hyperbolic lattices.* [arXiv:2203.15208] - Accepted in Physical Review Letters

Preprints

Conferences and Schools

Topological mechanics of hyperbolic and spherical Maxwell lattices (contributed talk), APS march Meeting 2022, Chicago, USA.

Hyperbolic lattice waves, band theory and boundary modes of high dimensional representations of infinite hyperbolic lattice (contributed talk), APS March Meeting 2022, Chicago, USA.

Frustrated Self-Assembly of Non-Euclidean Crystals of Nanoparticles (contributed talk), APS March Meeting 2021 (virtual)

A buckling model of an active epithelial tissue (contributed talk), APS March Meeting 2019, Boston, USA.

Topological defects and shapes of triatic liquid crystal vesicles (contributed talk), APS March Meeting 2017, New Orleans, USA.

Shapes and Singularities in Triatic Liquid Crystal Vesicles (poster presentation) at the 5th Soft Matter Summer School and the 24th Innovative Workshop on Bio/Soft Materials: Membranes at KAIST, Daejeon, South Korea. [Travel and lodging funding awarded by the UCSB Materials Research Lab (MRL)]. (July 2017)

Teaching

Main Instructor for *General Physics 1 – PHY211* (Summer 2015).

Teaching Assistant for *General Physics 1 – PHY211* at Syracuse University (Spring 2015-16-17-18, Fall 2015-16).

Grader for *Thermodynamics and Statistical Mechanics – PHY 731* and *Introduction to Modern Physics – PHY 361* at Syracuse University (Spring 2019).

Professional Services

Referee for Physical Review Letters.

Organizer of the Topological Mechanics Journal Club and Study Group held weekly. (2019-present)

Awards

Summer Graduate Fellowship from the Syracuse Soft Matter Program. (Summer 2017)

Luciano Fonda Fellowship for Pyhsics from the University College for Sciences at Trieste University. (AYs 2008-09, 2009-10, 2010-11)

Last updated: July 29, 2022