

Workshop on
“New Trends in the Variational Modeling and Simulation of Liquid Crystals”

December 2 – 6, 2019

organized by

**Giovanni Di Fratta (TU Vienna), Michele Ruggeri (TU Vienna),
Valeriy V. Slastikov (U of Bristol), Arghir D. Zarnescu (BCAM, Bilbao)**

Workshop homepage: <https://www.asc.tuwien.ac.at/esi-liquidcrystals2019/>

• **Monday, December 2, 2019**

09:00 – 09:30 *Registration*

09:30 – 09:45 *Opening*

09:45 – 10:45 **Peter Palffy-Muhoray (Kent State University)**

The physics of liquid crystals

10:45 – 11:15 *Coffee / Tea Break*

11:15 – 12:15 **Dmitry Golovaty (The University of Akron)**

The mathematics of liquid crystals

12:15 – 14:00 *Lunch Break*

14:00 – 14:45 **Lech Longa (Jagellonian University)**

Twist-bend nematic phase from Landau–deGennes perspective

14:45 – 15:30 **Georgy Kitavtsev (University of Oxford)**

Solution patterns for active gel systems with a free evolving boundary

15:30 – 16:00 *Coffee / Tea Break*

16:00 – 16:45 **Peter J. Sternberg (Indiana University)**

A model problem for nematic-isotropic transitions with highly disparate elastic constants

• **Tuesday, December 3, 2019**

09:15 – 10:00 **Chun Liu (Illinois Institute of Technology)**

Transport and diffusion in biological environments

10:00 – 10:45 **Jamie M. Taylor (BCAM, Bilbao)**

Microscopic to macroscopic modelling in liquid crystals

10:45 – 11:15 *Coffee / Tea Break*

11:15 – 12:00 **Linda J. Cummings (NJIT)**

Modeling and large-scale simulation of thin film liquid crystal flows

12:00 – 14:00 *Lunch Break*

14:00 – 14:45 **Elisabetta Rocca (University of Pavia)**

Nonlinear electrokinetics in nematic electrolytes

14:45 – 15:30 **Lidia Mrad (Mount Holyoke College)**

Toroidal self-assembly in columnar cholesteric liquid crystals

15:30 – 16:00 *Coffee / Tea Break*

16:00 – 16:45 **Bianca Stroffolini (University of Naples Federico II)**

A free boundary problem for smectics (Lacaze experiment)

● **Wednesday, December 4, 2019**

09:15 – 10:00 **Miha Ravnik (University of Ljubljana)**

Nematic structures for advanced optical performance: metamaterials, photonic crystals and cloaking devices

10:00 – 10:45 **Tiziana Giorgi (New Mexico State University)**

Boundary vortex formation in polarization-modulated orthogonal smectic liquid crystals

10:45 – 11:15 *Coffee / Tea Break*

11:15 – 12:00 **Carlos J. García-Cervera (UC Santa Barbara)**

Undulations and switching mechanisms in smectic liquid crystals

12:00 – 12:15 *Workshop picture*

12:15 – 14:00 *Lunch Break*

14:00 – 14:45 **Mikhail A. Osipov (University of Strathclyde)**

Density functional approach to the molecular theory of rod-coil diblock copolymers

14:45 – 15:30 **Mark Wilkinson (Heriot-Watt University)**

The Boltzmann equation for non-spherical particles

15:30 – 16:00 *Coffee / Tea Break*

16:00 – 16:45 **Ibrahim Fatkullin (The University of Arizona)**

Limit shapes for Gibbs ensembles of partitions

● **Thursday, December 5, 2019**

09:15 – 10:00 **Ivan I. Smalyukh (University of Colorado Boulder)**

Adaptive and active crystals of knot solitons

10:00 – 10:45 **Apala Majumdar (University of Strathclyde)**

Pattern formation in confined nematic systems

10:45 – 11:15 *Coffee / Tea Break*

11:15 – 12:00 **Radu Ignat (Université Paul Sabatier)**

Vortices on 2D surfaces and applications

12:00 – 12:45 **Antonio Segatti (University of Pavia)**

Functional framework and topological defects in nematic shells

12:45 – 15:30 *Lunch Break / Free Time*

15:30 – 16:00 *Coffee & Cake at TU Wien*

16:00 – 17:00 **John M. Ball (Heriot-Watt University)**

Distinguished PDE Lecture 2019: Some mathematical problems of liquid crystals

(Boecklsaal, main building of TU Wien, Stiege 1, 1st floor, Karlsplatz 13, 1040 Vienna)

17:00 – 18:00 *Glühwein at Karlsplatz Christmas market*

20:00 – 24:00 *Social dinner at Augustinerkeller Bitzinger*

• **Friday, December 6, 2019**

09:15 – 10:00 **Giacomo Canevari (University of Verona)**

Effective free energies for polydisperse nematic colloids

10:00 – 10:45 **Xavier Lamy (Université Paul Sabatier)**

Saturn ring defect around a large colloid particle

10:45 – 11:15 *Coffee / Tea Break*

11:15 – 12:00 **Christos N. Likos (University of Vienna)**

Hydrodynamics meets topology: Equilibrium and flow properties of ring polymers

12:00 – 12:45 **Stan Alama (McMaster University)**

Thin film nematics with oblique anchoring and boojums

12:45 – 13:00 *Closing*

Except the one on Thursday afternoon, all talks take place at ESI, Boltzmann Lecture Hall!