Symposium Active nematics: From 2D to 3D (SYAN)

jointly organised by
the Biological Physics Division (BP),
the Chemical and Polymer Physics Division (CPP), and
the Dynamics and Statistical Physics Division (DY)

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Active nematics are one of the most studied manifestations of active matter with main examples being mixtures of cytoskeletal filaments and motor proteins, but also force-generating, deforming and reorienting cells in living tissue. While the vast majority of active nematics have been studied in 2D systems, recently several advances towards 3D active nematics were made. Examples are systems that undergo multiple transitions from 3D space-filling to a compressed sheet, active filaments embedded in a passive liquid crystal and organoids in the case of tissue. The symposium will feature the experimental and theoretical challenges in the transition from 2D to 3D active nematic systems and its implications.

Overview of Invited Talks and Sessions

(Lecture hall Audimax 1)

Invited Talks

SYAN 1.1	Fri	10:00–10:30	Audimax 1	**Corrugated patterns made from an active nematic sheet** — •Anis Senoussi, Shunichi Kashida, Raphaël Voituriez, Jean-Christophe Galas, Ananyo Maitra, Estevez-Torres André
SYAN 1.2	Fri	10:30–11:00	Audimax 1	**Wrinkling instability in 3D active nematics** — •Isabella Guido
SYAN 1.3	Fri	11:15–11:45	Audimax 1	**Three-dimensional active nematic defects and their energetics** — •Miha Ravnik
SYAN 1.4	Fri	11:45–12:15	Audimax 1	**Liquid-crystal organization of liver tissue** — •Benjamin M Friedrich, Hernan Morales-Navarrete, Andre Scholich, Hidenori Nonaka, Fabian Segovia Miranda, Steffen Lange, Jens Karschau, Yannis Kalaidzidis, Frank Jülicher, Marino Zerial
SYAN 1.5	Fri	12:15–12:45	Audimax 1	**Machine learning active nematic hydrodynamics** — •Vincenzo Vitelli

Sessions

SYAN 1.1–1.5	Fri	10:00–12:45	Audimax 1	**Active nematics: From 2D to 3D**