IST AUSTRIA
Institute of Science and Technology

Life Sciences Seminar

Controlling active matter with curvature and topology

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Host: Martin Loose

Active nematic liquid crystals are achieved experimentally by combining high concentrations of microtubules, kinesin and ATP. These active nematic suspensions can then be localized to a 2D interface, such as the surface of a water droplet suspended in another medium. We will discuss the distribution of topological defects within an active nematic liquid crystal confined to the surface of a toroidal water droplet. Due to the topology of the surface, it is possible to coat a torus in a nematic material with no topological defects. When the activity of the nematic is sufficiently high, topological defects will spontaneously form, but they must preserve the net topological charge of the system, which is zero. Through experiment and simulation we confirm that the local distribution of topological defects is proportional to the Gaussian curvature. As the activity of the system is increased the reliance on the Gaussian curvature is diminished and the available area on different regions of the torus dictates the behavior.

Tuesday, April 16, 2019 01:00pm - 02:00pm

IST Austria Campus Mondi Seminar Room 3, Central Building

This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: https://ist.ac.at/en/campus/how-to-get-here/ The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.