

Seminar über Biomedizinische Photonik

Referent/in: Prof. Dr. Pietro Cicuta, University of Cambridge (UK), Cavendish Laboratory

Titel: Measuring and Modeling the coordination of cilia: from collective waves in the brain to information processing

In the last decade we have investigated the emergence of synchronised collective states in the dynamics of two or more motile cilia. Motile cilia are filaments of around 10 microns in length, they beat by the coordinated action of molecular motors along the filament. In systems of several cilia, the beat across cilia can become phase locked, leading to fluid transport or propulsion. We have pushed two directions in my team:

(1) experiments on lung and brain tissue models, and (2) models that reduce the complexity of each cilium to the extreme, to enable attempts at describing the collective motion. For such a specific organelle (although present in a wide range of eukaryotic cells) the range of physics and phenomena that arise are really diverse. The ciliary collective motions I will show are at play in mammalian embryonic development, in the lungs and brains, but can also carry information directionally and can be used to form logical circuits in a form of physical computation. In this talk we will review recent progress and some unpublished results.

Zeit: Mittwoch, 1. Dezember 2021, 10:15

Ort: Room A97, Sidlerstrasse 5, 3012 Bern

Zoom-Meeting beitreten
<https://ethz.zoom.us/j/61815014586>

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