SUMMER SEMESTER 2023

RTG 2756 CYTAC SEMINAR SERIES

TUESDAY, APRIL 25,
17:15 IN HS5

CYTAC

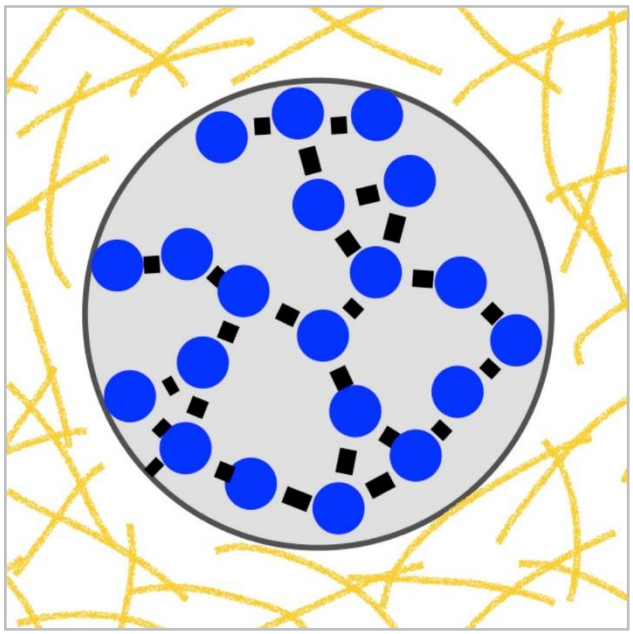
RTG 2756

DR. DAVID ZWICKER

Theorie biologischer Flüssigkeiten

Max-Planck-Institut für Dynamik und Selbstorganisation

THEORY OF DROPLETS EMBEDDED IN ELASTIC MESHES



Droplet formation is a fundamental process for the spatiotemporal organization of biomolecules in cells. Since the cellular environment is crowded, it is crucial to consider the elastic properties of the droplets' environment. In this talk, I will present a theoretical description of droplets forming in elastic matrices. I will show how monodisperse emulsions form when droplets grow in a mesh that can break and re-arrange. Moreover, I will demonstrate that stiffness gradients cause elastic ripening, which biases droplets toward softer regions. These processes quantitatively explain how oil droplets form in PDMS matrices, as observed in Eric Dufrense's lab at ETH Zürich. In the end, I will relate our findings to ongoing work investigating the relation between a relevant biological example of droplets and the surrounding microtubule cytoskeleton.