

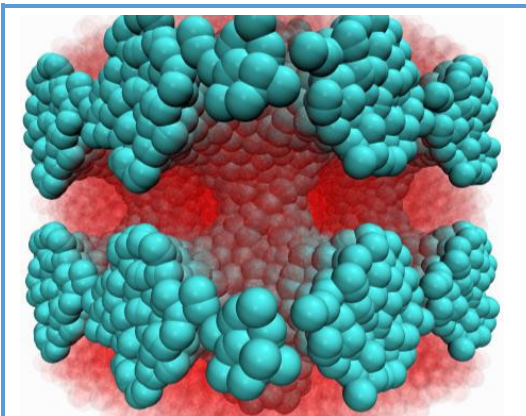
Physikalisches Kolloquium

Donnerstag, 22.05.2025, 16:30 Uhr – Hörsaal 5J

Active Matter driven by Growth

Dr. Jens Elgeti

Forschungszentrum Jülich Institute of Advanced Simulations
Theoretical Soft Matter and Biophysics



Coexistence in competing tissues: Interfacial growth stabilizes a bicontinuous phase

Active matter is matter driven out of equilibrium by its microscopic constituents. Common examples include the cytoskeleton of the cell, bacteria swimming in a fluid, or herds of wildebeest on the African planes. In these systems, the constituents create forces and motion driving the system out of equilibrium. But now imagine cells dividing or a tumor growing -- a growing material is also active matter. However, activity does not enter the dynamics via the forces, but by material conservation. The material generates itself, introducing a plethora of novel phenomena.

This Growth implies a change in volume. In physical terms, the conjugate force to a change in volume is pressure. Thus, in order to grow, cells must exert

mechanical pressure on the neighboring tissue. In turn, mechanical stress influences growth and may play a role in cell competition. In this talk, I will discuss how mechanics influence growth and a series of striking phenomena that emerge, ranging from liquification by cell turnover to mechanically controlled cell competition and divergent evolution.

Ab 16:00 Uhr Kaffee, Tee und Gebäck im Foyer vor dem Dekanat der Math.-Nat.-Fakultät (Gebäude 25.31. Ebene 00)

**Für die Dozenten der Physik
Prof. Dr. Hartmut Löwen**