Mathematisch-Naturwissenschaftliche Fakultät
Wissenschaftliche Einrichtung Physik

Physikalisches Kolloquium

Donnerstag, 29.10.2026, 16:30 Uhr – Hörsaal 5J

Solid yet liquid? The intriguing properties of biological matter

Prof. Dr. Sarah Köster
Institute for X-Ray Physics, Georg-August-University Göttingen

The tissues in our body exhibit astonishing mechanical and dynamic properties that are perfectly adapted to their function. For example, muscle cells actively contract, immune cells are highly motile, and cells in the skin or lungs form stable, highly interconnected structures. Notably, biological cells and tissues possess both elastic, solid-like properties and viscous, liquid-like properties. The viscoelastic properties of these tissues are largely determined by the cytoskeleton, which is a composite biopolymer network consisting of three filament systems: intermediate filaments, actin filaments, and microtubules, as well as cross-linkers and molecular motors. Of these cytoskeletal filaments, intermediate filaments are the most flexible and extensible, exhibiting intriguing nonlinear behavior. Using modern biophysical methods such as atomic force microscopy and optical tweezers, as well as modeling, we have investigated this class of biopolymer and found that intermediate filaments serve as 'safety belts' and 'shock absorbers' for the cell. This allows the cell to avoid damage from high-speed impact while maintaining flexibility during processes such as cell motility.

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