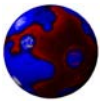
Prof. Dr. S. Hollands
Prof. Dr. J. Meijer



Sächsische Forschergruppe FOR 877

UNIVERSITÄT LEIPZIG
Fakultät für Physik und Geowissenschaften

Physik-Kolloquium

Dienstag, den 20.05.2014, 16.00 Uhr

Prof. Michael E. Cates

School of Physics and Astronomy, University of Edinburgh

The Physics of Cellular Motility

Cells attached to walls or in tissues can propel themselves by a variety of mechanisms. These are generally discussed in terms of the complicated biochemical feedbacks present in every cell. Here I will instead explore a physics-based approach: what is the simplest combination of physical ingredients that can allow cells to swim or to crawl through their surroundings? I will present a minimal model of cell propulsion based on an emulsion droplet of active polar liquid crystal. This object can swim through a bulk fluid by a mechanism that may (but need not) involve spontaneous symmetry breaking. When attached to a wall and subjected to suitable boundary influences, the droplet can also crawl. These results are possibly suggestive of a 'motility engine' whose function, although controlled by the cell's complex biochemical feedback networks, does not depend upon these for its operational principles.

Ort: Hörsaal für Theoretische Physik, Linnéstraße 5
Alle Teilnehmer sind ab 15.30 Uhr zu Kaffee vor dem Hörsaal eingeladen.