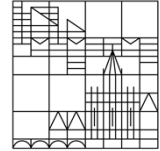


Physikalisches Kolloquium

Universität
Konstanz

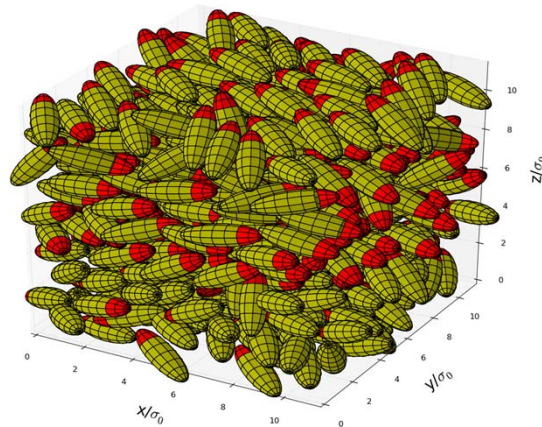


Di 16.01.18
15:15 Uhr
14:45 Uhr, Kaffee/Tee
R 513



Prof. Dr. Joseph Brader
University of Fribourg
Switzerland

Theoretical approaches to active colloidal particles



An active liquid crystal (the Gay-Berne model) in the nematic state.
The red end of each particle indicates the direction in which it is driven.

Active particles in suspension are currently the subject of much attention. This is due largely to their ability to model self-organisation phenomena in biological systems, but also because they provide new opportunities for fundamental research in nonequilibrium statistical mechanics; assemblies of active particles are intrinsically out-of-equilibrium systems.

Several experimental model systems have been developed, such as catalytic Janus particles, colloids with artificial flagella and light activated particles. Theorists are thus challenged to develop first-principles theoretical approaches to describe these systems from microscopic starting points.

In this talk we will consider recent theoretical approaches to describing a number of interesting active phenomena: motility-induced phase separation, the response to spatially dependent 'activity fields' and the influence of activity on liquid crystal phases.