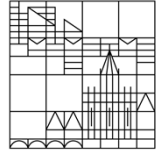


Physikalisches Kolloquium

Universität
Konstanz

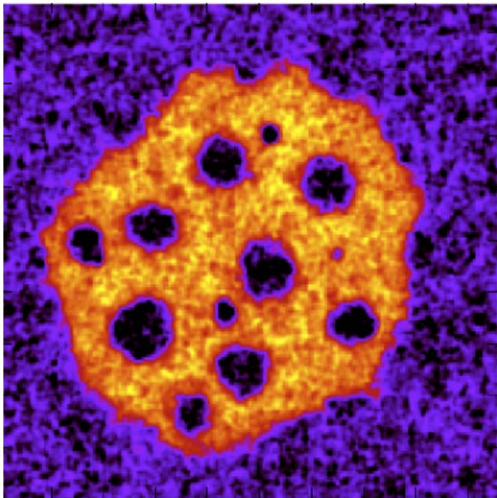


Di 13.11.18
15:15 Uhr
14:45 Uhr, Kaffee/Tee
R 513



Prof. Dr. Michael Cates, FRS
University of Cambridge, UK

Fällt aus!



Active field theories: Statistical physics and the arrow of life

Active matter comprises particles whose microscopic dynamics breaks time-reversal symmetry (TRS) via the continuous conversion of fuel into motion, resulting in entropy production at the microscopic scale. Examples include bacteria and synthetic self-propelled colloids. Equilibrium statistical physics concepts, for instance the Boltzmann distribution, are not applicable to active matter because these concepts assume the TRS of the underlying microscopic laws. When viewed at a coarse grained level, the microscopic absence of TRS may either remain obvious at large scales or become almost undetectable. In the latter case, we retain the hope that equilibrium concepts, at least in some modified form, may be applicable. This talk will discuss the conceptual toolbox needed to characterize the presence or absence of TRS at coarse-grained level, focusing on global and local measures of entropy production. Put differently: when, and how, can you tell whether life's movie is running backwards?