Einladung zum Vorstellungsvortrag
der der Habilwerberin
im Rahmen des Fakultätskolloquiums
(einer von zwei Vorträgen)

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“Emergence of complex function in interacting
biological communities”

Reaction-diffusion systems like the Belousov-Zhabotinski reaction or Turing systems, are characterized by
emergent spatial patterning and far-from equilibrium dynamics. Typically, the length scale of the macro-
scopic, ordered structures that allow the system to organize at a collective level, is independent of the un-
derlying scale of microscopic interactions among components. Microbiota show similar properties. In detail,
they constitute interacting communities, are subjected to matter and information flow and exhibit collective
functional traits at the level of the ecosystem. In my talk I will show how the far-from equilibrium framework
can be successfully applied to model these ‘microbial multi-particle systems’ with the objective to dissect
emergent community function. I will present examples from soil and lung communities and discuss the
emergence of the keystone property that is essential for community robustness. I will take a stance on
keystoneness as general property of structured, interacting communities and will show how we applied this
attribute in big, biomedical data to predict drug targets for persons with chronic lung disease.

Montag, 14. Mai 2018, 16:00 Uhr
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