



WESTFÄLISCHE  
WILHELMS-UNIVERSITÄT  
MÜNSTER



FACHBEREICH  
PHYSIK

# › Allgemeines Physikalisches Kolloquium

› Donnerstag, 11.01.2018 um 16 Uhr c.t.

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Westfälische Wilhelms-Universität



## „Control and Selection of Spatio-Temporal Patterns in Dissipative Systems“

We are interested in control and selection mechanisms for spatio-temporal patterns in complex systems. We discuss two different control strategies in detail: In the first part of the talk, a local feedback loop, namely a time-delayed feedback scheme, is analyzed and applied to different model systems possessing periodic as well as localized solutions. Starting with the Pyragas control, a simple version of the time-delayed feedback control, we show that a simple time-delayed feedback loop provides a robust and controllable mechanism responsible for the motion as well as for complex oscillatory dynamics of periodic structures and localized patterns.

The second part of the talk attends to the influence of a periodic spatial forcing on the pattern formation in a model describing Langmuir-Blodgett transfer experiments, where a monolayer of phospholipid molecules is transferred onto a solid substrate producing patterned deposit layers. We develop a simplified description of the LB transfer based on an amended Cahn-Hilliard equation, including a description of pattern formation on prestructured substrates.

We discuss the locking effects of different order between the occurring self-organized patterns and periodic prestructures and show that locking effects can also be found in experiments, which now allows the production of patterns of either higher complexity or regularity with a wide variety of features.

Kolloquiums-Kaffee  
ab 16 Uhr vor dem Hörsaal

Wilhelm-Klemm-Straße 10  
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