

26th Seminar on “Pattern Formation in Chemistry and Biophysics”, Leucorea, Lutherstadt Wittenberg February 20-22, 2025

Organized by Markus Bär, Martin Falcke, Katharina Krischer, Ulrich Parlitz and Pawel Romanczuk

„Ihr könnt predigen, über was ihr wollt, aber predigt niemals über vierzig Minuten.“ Martin Luther

Thursday, February 20	
14:00h Markus Bär, PTB Berlin	Opening
14:10h Josef Käs, Uni Leipzig	The metastatic cascade – Does Oncology need the Physics of Cancer?
14:50h Marcel Eberhard, MDC Berlin	Cell persistence and morphodynamic states of cell motion on fibronectin lanes
15:10h Yunus Sevinchan, HU Berlin	Spatio-temporal dynamics in a bio-inspired behavioral contagion model
15:30h Valentin Lecheval, HU Berlin	Spatial patterns from first principles in collective behaviour systems
15:50h	Coffee break
16:10h Markus Bär, PTB Berlin	Protein patterns on membranes as example for pattern formation with conserved quantities and non-reciprocal interactions
16:50h Julius Fischbach, TU München	Dynamic Catalysis in the Dynamical Systems Framework
17:10h Katharina Krischer, TU München	Hierarchies of Cluster States in Ensembles of Coupled Oscillators
18:30	Dinner
Friday, February 21	
9:00h Carsten Beta Uni Potsdam	Biohybrid Active Matter
9:40h Jeanine Shea, TU Berlin	Emergent collective behavior of cohesive, aligning particles
10:00h Horst-Holger Boltz, Uni Greifswald	Kinetic Theory Beyond Mean-Field for Dry Active Aligning Matter
10:20h	Coffee break
10:40h David Zwicker, MPI DS Göttingen	Pattern formation in non-ideal fluids
11:20h Pawel Romanczuk, HU Berlin	Clustering and Emergent Metric-like States of Active Particles with Metric-free Polar Alignment
12:00h Ralf Stannarius, Uni Magdeburg	Topological defect dynamics and interactions in anisotropic fluids
12:40h	Lunch
14:20h Henning Reinken, Uni Magdeburg	Self-sustained patchy turbulence in shear-thinning active fluids
15:00h Kirsten Harth, TH Brandenburg	Rotation, Translation and Collisions in Granular Gases: In-situ and Optical Measurements
15:40h Laura Diaz, MPI DS Göttingen	Taming Arrhythmias with Patterned Illumination in Optogenetically Modified Hearts

16:00h	Coffee break
16:20h Valerii Chirkov, HU Berlin	Dynamics of Spatio-Temporal Clusters in Social Foraging
16:40h Vladimir Zykov, MPI DS Göttingen	Unexplored aspects of the spiral wave dynamics in the Barkley model
17:40h Benjamin Weiß, MPI DS Göttingen	Analysing human ventricular fibrillation using 4D echocardiography
18:00h Wilhelm Neubert, MDC Berlin	The Sodium-Calcium Exchanger and Calcium-induced Calcium Release in Ventricular Cardiomyocytes
18:20h Ulrich Parlitz, MPI DS Göttingen	Predicting chaotic time series using reservoir computing
Saturday, February 22	
9:00h Uwe Thiele, Uni Münster	The conserved Hopf instability
9:40h Adrián E. Granada, Charité Berlin	Circadian Coupling Orchestrates Cell Growth
10:00h Oleh Omelchenko, Uni Potsdam	Control of bump state motion in two-dimensional networks of leaky integrate-and-fire neurons
10:20h	Coffee break
10:40h Kristian Blom, MPI Mult. Nat. Göttingen	The nonreciprocal Ising model: from a lattice model to a non-equilibrium field theory
11:20h Hidemasa Ishii, Uni Potsdam	Reducing the complexity of phase-field models for cell motility
11:40h Yusuke Kato, Uni Potsdam	Bayesian estimation of Kuramoto model parameters from macroscopic quantities
12:00h Martin Falcke, MDC Berlin	Random walks in dynamic environments
12:40h Organizers	Closing
12:50h	Lunch