

Nonlinear Dynamics and Emergence Across Scales: Active, Chaotic, and Complex Systems

866. WE-Heraeus-Seminar

14 – 18 September 2026

at the Station Biologique de Roscoff, France

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program

Monday, 14 September 2026

15:00 – 15:50	Registration & welcome coffee	
15:50 – 16:00	Words from the organizers	
16:00 – 16:35	Igor Aronson	Partial Fluidization Theory of Collective Cell Migration
16:35 – 17:10	Isabella Guido	Active Microtubule Networks in Evaporation Droplets
17.10 – 17:35	Guiseppe Fava	Density-protected States in Active Matter under Virtual Confinement
17:35 – 18:00	Poster spotlight	
18:30 – 19:30	Poster session	
19:30	<i>DINNER</i>	

Program

Tuesday, 15 September 2026

09:00 – 09:35	Julien Tailleur	Flocking with Hugues: Collective Motion With(out) a Leader
09:35 – 10:10	Alexandre Solon	Robustness and Fragility of Polar Active Fluids
10:10 – 10:45	Thibault Bertrand	Flocking Against the Odds
10:45 – 11:20	<i>COFFEE BREAK</i>	
11:20 – 11:55	Sriram Ramaswamy	Nonreciprocal Planar Lattice Models
11:55 – 12:30	Andrea Cavagna	Spin-waves without Spin-waves: A Case for Soliton Propagation in Starling Flocks
13:00 – 14:30	<i>LUNCH</i>	
15:00 – 15:35	Carolina Brito	Statistical Signatures of Microorganism Motility Under Environmental Stress
15:35 – 16:00	Rajesh Singh	Flocking Transition in Phoretically Interacting Active Particles: Role of Disorder
16:00 – 16:35	<i>COFFEE BREAK</i>	
16:35 – 17:10	Masaki Sano	Classifying Tissue Properties via Collective Dynamics around Topological Defects
17:10 – 17:45	Karsten Kruse	Defects States in Renewing Active Matter
17:45 – 18:00	Stefan Jorda	About the Wilhelm and Else Heraeus Foundation
18:30 – 19:30	Poster Session	
19:30	<i>DINNER</i>	

Program

Wednesday, 16 September 2026

09:00 – 09:35	Leihan Tang	From Domain Walls to “Entropy-ons”: Building the State Space of a 2D Spin Glass
09:35 – 10:10	Antonio Politi	Metastability and Condensation Phenomena in Statistical Systems with Two Conservation Laws
10:10 – 10:35	Roos De Boer	Ghost State of Light
10:35 – 11:10	<i>COFFEE BREAK</i>	
11:10 – 11:45	Anaël Lemaître	TBA
11:45 – 12:20	Hugues Chaté	TBA
13:00 – 14:00	<i>LUNCH</i>	
14:30	Excursion: ferry departure to Ile de Batz	
17:00	Excursion: ferry departure to Roscoff	
19:00	WE-Heraeus Conference Banquet	

Program

Thursday, 17 September 2026

09:00 – 09:35	Arkady Pikovsky	Scaling Properties of Kuramoto Chaos
09:35 – 10:10	Léonie Canet	Scaling Regimes of the Kuramoto-Sivashinsky Equation
10:10 – 10:45	Peter Grassberger	Simulations of Parity-conserving Directed Percolation
10:45 – 11:20	COFFEE BREAK	
11:20 – 11:55	Silvia De Monte	Fluctuations and Patterns in Complex Ecological Communities
11:55 – 12:30	Fred Wolf	Learning the Laws of Collapse
13:00 – 14:30	LUNCH	
15:00 – 15:35	Xiaqing Shi	Kuramoto-Vicsek Model for Active Matter
15:35 – 16:00	Ananyo Maitra	Active Translation Symmetry-broken States in Disordered Environments
16:00 – 16:35	COFFEE BREAK	
16:35 – 17:10	Ramin Golestanian	Quantifying Dissipation in Active Matter
17:10 – 17:45	Leonardo Brunnet	Activity-Controlled Segregation Time Scales in Self-Propelled Particle Ensembles
17:45 – 18:20	Serena Dalena	Building Physics Together: A Decade of *Physical Review Letters* and What's Next
18:20 – 19:00	Open discussion	
19:30	DINNER	

Program

Friday, 18 September 2026

09:00 – 09:35	Viola Priesemann	Learning and Information Spread in Neural Networks
09:35 – 10:10	Holger Kantz	Understanding the Superiority of Multi-model Ensemble Forecasts through Reservoir Computing
10:10 – 10:35	TBA	
10:35 – 11:10	<i>COFFEE BREAK</i>	
11:10 – 11:45	Yuhai Tu	Dynamics of Learning: Lessons from Living Systems to Artificial Neural Networks
11:45 – 12:20	Eric Bertin	Theory of Collective Learning in Populations of Adaptive Agents
13:00 – 14:30	LUNCH	
15:00 – 15:35	Jacques Prost	Living Layered Systems
15:35 – 16:10	Kazumasa Takeuchi	Experimental Approaches to Statistical Physics in Large Chaotic Systems
16:10	Concluding words from the organizers and coffee	

End of the seminar