

## French-German WE-Heraeus-Seminar "Novel Physics in Living Systems?"

### PROGRAM

**Monday, 2 September 2019**

- 14:00            **Registration and welcome coffee** at the conference centre
- 14:45 – 15:00   **A few words from the organizers**
- 15:00 – 15:35   Karsten Kruse            **The dynamics of life**
- 15:35 – 16:10   Anne-Florence Bitbol   **Proteins: sequences and physics**
- 16:10 – 16:30   *COFFEE BREAK*
- 16:30 – 18:00   Special Session  
**1 minute to present yourself and point out something about  
"Novel Physics in Living Systems?",  
1 more minute to outline your poster, if you present one.**
- 18:30            *POSTER SESSION + APERITIF (at Gulfstream Hotel)*
- 19:30            *DINNER (at Gulfstream Hotel)*

**Tuesday, 3 September 2019**

- 9:00 – 9:35      Ramin Golestanian        **How living matter self-organizes while  
breaking action-reaction symmetry**
- 9:35 – 10:10     Alessandro Torcini        **Transition from asynchronous to  
oscillatory dynamics in balanced  
spiking networks**
- 10:10 – 10:35   Moritz Helias              **Critically disordered cortical networks**
- 10:35 – 10:55   *COFFEE BREAK*
- 10:55 – 11:20   Xiaqing Shi                **Bacterial active nematics**
- 11:20 – 11:55   Knut Drescher             **Dynamics of bacterial collective  
behavior**
- 11:55 – 12:30   Carine Douarche         **Collective motion in bacterial  
suspensions**
- 13:00            *LUNCH (at Gulfstream Hotel)*

**Tuesday, 3 September 2019**

15:00 – 15:35	Erwin Frey	<b>Emergence and self-organization in biological systems</b>
15:35 – 16:00	Evelyn Tang	<b>Control and localization of a stochastic particle in a flow-field</b>
16:00 – 16:25	Jacob Metzger	<b>Modeling development and disease using neural organoids</b>
16:25 – 16:45	<i>COFFEE BREAK</i>	
16:45 – 17:20	Fred Wolf	<b>A phase transition at the origin of primate brain evolution</b>
17:20 – 17:55	José Halloy	<b>Animal collective behavior: more physics, less physics or beyond physics?</b>
18:30	<i>POSTER SESSION + APERITIF (at Gulfstream Hotel)</i>	
19:30	<i>DINNER (at Gulfstream Hotel)</i>	

**Wednesday, 4 September 2019**

*EXCURSION*

13:00	<i>LUNCH (at Gulfstream Hotel)</i>	
14:30 – 15:05	Jean-François Joanny	<b>Active hydrodynamics of biological tissues</b>
15:05 – 15:40	Dieter Braun	<b>Microscale nonequilibria for the emergence of life</b>
15:40 – 16:05	Philip Bittihn	<b>Emergence and control of population dynamics and structure in bacterial microcolonies</b>
16:05 – 16:25	<i>COFFEE BREAK</i>	

## Wednesday, 4 September 2019

16:25 – 16:50	Wolfgang Keil	<b>Towards quantitative studies of post-embryonic development in <i>C. elegans</i></b>
16:50 – 17:25	Matthew Turner	<b>Intrinsically motivated collective motion</b>
17:25 – 18:00	Elisabeth Fischer-Friedrich	<b>New principles of material design – mechanics of the actin cortex</b>
18:30	<i>POSTER SESSION + APERITIF (at Gulfstream Hotel)</i>	
19:30	<i>DINNER (at Gulfstream Hotel)</i>	

## Thursday, 5 September 2019

9:00 – 9:35	Albrecht Ott	<b>Spontaneous autocatalysis in a prebiotic soup</b>
9:35 – 10:10	Matthias Kaschube	<b>The dynamics of internally generated brain activity</b>
10:10 – 10:45	David Hansel	<b>The balanced state: the standard model and beyond</b>
10:45 – 11:15	<i>COFFEE BREAK</i>	
11:15 – 11:50	Demian Battaglia	<b>When neural systems tell us that we should respect their complexity</b>
11:50 – 12:25	Pierre Sens	<b>Physical models of crawling cell motility</b>
13:00	<i>LUNCH (at Gulfstream Hotel)</i>	
15:00 – 15:35	Thomas Gregor	<b>Insights into spatial genome organization using polymer physics</b>
15:35 – 16:10	Ulrich Schwarz	<b>Master equation models for binding and transport problems in biological systems</b>

**Thursday, 5 September 2019**

16:10 – 16:30	<i>COFFEE BREAK</i>	
16:30 – 17:05	François Graner	<b>From cell dynamics to epithelial tissue patterning</b>
17:05 – 17:40	Julien Tailleur	<b>How (biological) activity alters thermomechanics: from pressure to surface tension</b>
17:40 – 17:55	Stefan Jorda	<b>About the Wilhelm and Else Heraeus Foundation</b>
19:00	<i>APERITIF AND BANQUET DINNER (at Gulfstream Hotel)</i>	

**Friday, 6 September 2019**

09:00 – 09:35	Vincent Hakim	<b>Synaptic domains and out-of-equilibrium phase coexistence</b>
09:35 – 10:10	Michael Lässig	<b>Survival of the simplest: the evolutionary cost of molecular complexity</b>
10:10 – 10:40	<i>COFFEE BREAK</i>	
10:40 – 11:15	Raphaël Voituriez	<b>First-passage statistics of non Markovian random walks and random search processes</b>
11:15 – 11:50	Stephan Grill	<b>Mechanics of oogenesis</b>
11:50 – 12:00	<b>Final words from the organizers</b>	
12:30	<i>LUNCH (at Gulfstream Hotel)</i>	