Symposium Physics of Biological and Synthetic Active Matter (SYBS)

jointly organized by
the Biological Physics Division (BP),
the Chemical and Polymer Physics Division (CPP), and
the Dynamics and Statistical Physics Division (DY)

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Active matter is formed by entities with an internal driving mechanism, that consumes energy and keeps the system constantly out of equilibrium. Prominent examples from the living world are motor-driven biopolymer networks and motile microorganisms. Synthetic systems, such as in-vitro motility assays or artificial microswimmers can mimic processes in biological active matter but also help to explore fundamental questions of non-equilibrium systems. This symposium will bring together the communities that work on biological and synthetic active matter to explore similarities and differences in the design principles of active motion, the emergent collective dynamics such as swarming, and the responses to external fields including the paradigmatic case of chemotaxis.

Overview of Invited Talks and Sessions

(Lecture room H0105)

Invited Talks

SYBS 1.1	Tue	9:30–10:00	H 0105	**Bacterial collective behaviours** — •Knut Drescher
SYBS 1.2	Tue	10:00–10:30	H 0105	**Nonlinear dynamics of beating cilia and flagella: Swimming, steering, and synchronization** — •Benjamin M. Friedrich
SYBS 1.3	Tue	10:30–11:00	H 0105	**Learning to navigate in dynamic environments: animal behavior and artificial intelligence** — •Antonio Celani
SYBS 1.4	Tue	11:15–11:45	H 0105	**Suspensions of active colloids** — •Cecile Cottin-Bizonne, Félix Ginot, Isaac Theurkauff, Christophe Ybert
SYBS 1.5	Tue	11:45–12:15	H 0105	**Spontaneous chiral symmetry breaking in active fluids** — •Jörn Dunkel

Sessions

SYBS 1.1–1.5	Tue	9:30–12:15	H 0105	**Physics of Biological and Synthetic Active Matter**

Related Sessions

Biological Physics Division (BP)

Active Matter, Fri 9:30–12:00 (H2013)
Poster Active Matter, Tue 14:00–16:00 (Poster B)

Dynamics and Statistical Physics (DY)

Active Matter I, Mon 10:00–13:15 (BH-N 243)
Active Matter II, Mon 15:30–19:00 (BH-N 243)
Active Matter III, Wed 15:00–18:15 (BH-N 243)
Poster Active Matter, Thu 15:30–18:00 (Poster A)