



CEA – Saclay, 91191 Gif-sur-Yvette Cedex

**Service de Physique de l'Etat Condensé - UMR 3680**

## SÉMINAIRE

Mercredi 13 février 2019 à 11h15

**Orme des Merisiers SPEC, Salle Itzykson, Bât.774**

### **Benno LIEBCHEN**

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### **From Chemotaxis to Pattern Formation in Self-Driven Particles**

The ability to navigate in chemical gradients, called chemotaxis, is crucial for the survival of self-propelled microorganisms like bacteria. It allows them to find food and to escape from toxins, but is also involved in signaling, which can be viewed as a basic form of communication in microorganisms allowing them to coordinate their collective behavior. Following the invention of synthetic colloidal microswimmers in the past decade, there is now a remarkably close analogue to biological signaling: these microswimmers self-propel by catalyzing a chemical reaction on part of their surface, which leads to self-propulsion, but also mediates chemical cross-interactions among the colloid, shaping their collective behavior. In this talk I will introduce simple models of self-propelled, or active particles and discuss their interactions through self-produced chemicals. The talk will show that "synthetic chemotaxis" provides a new and generic route to pattern formation, which may help understanding recent experiments in active colloids observing a "living cluster phase" and may inspire new research on self-assembly with active colloids

*A coffee break will be served at 11h00.*

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