

**Donnerstag,  
17. November 2016  
ab 17 Uhr, ZMT**

Foto: Kim Sneppen, NBI

## Self organization of diversity in living systems

At many scales, biology presents an astounding diversity of discrete states or species that coexist. This includes the genetically identical cells in our body, different species that coexist in spite of fierce competition, and a vast diversity of viruses and diseases that propagate and interact through the immune systems of their hosts. I will discuss these broad features of diversity in terms of a few illustrative models, and I will do so while drawing inspiration from daily social phenomena. In particular, I will present:

- 1) a model for bi-stability, which guides our understanding of epigenetics and also of break-down of lake food-webs;
- 2) a model for biological diversity of competing lichen species, inspired from classical models of coral reefs; and
- 3) models for disease spreading, inspired by spreading of ideas or words among humans.

### Kim Sneppen

Center for Models of Life, Niels Bohr Institute, Copenhagen, Denmark.



Professor Kim Sneppen is the head of the Center for Models of Life at the Niels Bohr Institute in Copenhagen, Denmark. His background is in nuclear physics, statistical mechanics, and complex systems. His articles on punctuated equilibrium in evolution, genetic networks, epigenetics, and phage biology are highly cited. Some of his recent work suggests new approaches to understand influenza epidemics, provides an extension of the competitive exclusion principle in food-webs, and offers a new view on DNA methylation in the human genome.