LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

ARNOLD SOMMERFELD CENTER FOR THEORETICAL PHYSICS

# Arnold Sommerfeld Lecture Series

## Professor Boris Shraiman

## KITP, Santa Barbara, USA

### Sommerfeld Theory Colloquium:

### Physics and Geometry of Morphogenesis

**One hundred years ago, D'Arcy Thompson – a nineteenth century polymath, working at the turn of the twentieth century – wrote a beautiful monograph, "On Growth and Form", in which he pondered the geometry of living forms and how it emerges in the process of Morphogenesis. Thompson was ahead of his time. Genetics and Developmental Biology have since come a long way in elucidating the general and particular aspects of Morphogenesis, uncovering the key genes and molecules that underlie the process in different animals and plants. Yet, Thompson's agenda of understanding how developmental processes actually specify the geometry of tissues, limbs and organs is far from complete. A particular challenge is to bridge the gap between microscopic scales, where molecular mechanisms operate, and the macroscopic scales of animal "shape and form". This challenge offers much for a Theoretical Physicist to think about. This talk will provide some examples, relating the study of order in the arrangement of fly wing hairs to ferromagnetism and uncovering an unexpected wealth of mechanical phenomena in the study of cellular flows in a fly embryo.**

**Wednesday, October 14, 2015, 16:15 h, Room A 348/349, Theresienstr. 37/III, LMU**

Prof. E. Frey