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ARNOLD SOMMERFELD
CENTER FOR THEORETICAL PHYSICS



Arnold Sommerfeld Lecture Series

Professor Nigel Goldenfeld
**University of Illinois at Urbana-
Champaign, USA**

Theory Colloquium:

The Life and Death of Turbulence

Turbulence is the last great unsolved problem of classical physics. But there is no consensus on what it would mean to actually solve this problem. In this colloquium, I propose that turbulence is most fruitfully regarded as a problem in non-equilibrium statistical mechanics, and will show that this perspective explains turbulent drag behavior measured over 80 years, and makes predictions that have been experimentally tested in 2D turbulent soap films. I will also explain how this perspective is useful in understanding the laminar-turbulence transition, establishing it as a non-equilibrium phase transition whose critical behavior has been predicted and tested experimentally. This work connects transitional turbulence with statistical mechanics and renormalization group theory, high energy hadron scattering, the statistics of extreme events, and even population biology.

Wednesday, July 4, 2018, 16:15 h, Room A348, Theresienstr. 37, LMU

Prof. E. Frey, U. Schollwöck