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ARNOLD SOMMERFELD
CENTER FOR THEORETICAL PHYSICS



Arnold Sommerfeld Lecture Series

Professor Boris Shraiman
KITP, Santa Barbara, USA

Public Lecture:

On the Possibility of Evolutionary Forecasting

When we think about evolution, it is typically in the context of natural history, seeking an explanation for the amazing diversity of life. Yet evolution is not only the matter of the past, but an ongoing dynamical process linking the past with the future. Evolutionary dynamics is particularly apparent in rapidly mutating microbes and viruses. For example, the virus causing seasonal flu continuously evolves to escape human immunity generated by previous infections: because of this process, we get the flu again and again. Can we understand evolutionary dynamics well enough to predict the future, at least far enough to help with the flu vaccine updates? This talk will review basic mechanisms of evolutionary dynamics and discuss some of the old and new approaches to evolutionary forecasting and the challenges that they face. Surprisingly, ideas from Theoretical Physics can be helpful in understanding evolutionary dynamics.

**Tuesday, October 13, 2015, 17:15 h, Room B 052, Theresienstr. 39,
LMU**