Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"What drives weather changes?"

Gregory Falkovich, Weizmann Institute of Science

Abstract: Winds are driven by the gradients of solar heating. Vertical gradients cause thermal convection on the scale of the troposphere depth (less than 10 km). Horizontal gradients excite motions on a planetary (10000 km) and smaller scales. Weather is mostly determined by the flows at intermediate scale (hundreds of kilometers). Where these flows get their energy from? The puzzle is that three-dimensional small-scale motions cannot transfer energy to larger scales while large-scale planar motions cannot transfer energy to smaller scales. In the talk, I'll describe experimental and observational data that suggest one possible resolution of this puzzle. I also describe some puzzling properties of two-dimensional turbulence including conformal invariance of statistics.

12:00pm
Friday, May 5, 2017
Pappalardo Room 4-349

Host: Leonid Levitov