

Date: **October 27th 2006**

Time: **11:00 AM**

Location: **Maryland Hall 110**

Speaker: **Dr. Benoit Cushman-Roisin**
 Dartmouth University

Title: **“Beyond Adolf Fick: A New Model of Turbulent Dispersion”**

Abstract

Turbulent dispersion proceeds not only faster but also in a qualitatively different manner than molecular diffusion. Yet, the majority of the oceanic and atmospheric models rely on the concept of a turbulent diffusivity. It is shown here that an alternative model can be developed to exhibit observed behavior. The new term in the diffusion equation, which is nonlocal, can be interpreted in terms of the probability density distribution (pdf) of the turbulent velocity. Different assumptions about this pdf actually leads to a family of models, one of which is the model proposed and another the classical Fickian model. A connection is also made with new models using fractional calculus.