Date: **March 24**

Time: **04:00 PM**

Location: **Maryland 110**

Speaker: **Dr. P.K. Yeung**
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Title: **"Reynolds number and Schmidt number scaling in turbulent mixing and dispersion"**

Abstract

A central concept underlying most theoretical descriptions and modeling approaches in turbulent flow is the idea of scale similarity, which is perhaps best exemplified by Kolmogorov's hypotheses (1941, and various modifications) of a quasi-universal behavior for the small scales at sufficiently high Reynolds numbers. However, recent research also shows a need for greater understanding and critical examination of various scaling issues in respect of variations in both the Reynolds number for the velocity field, and the Schmidt number for passive scalar fields mixed and transported by the flow. In this talk, we will use Direct Numerical Simulation (DNS) data at up to 1024^3 resolution as our primary tool of investigation. Appropriate contrasts are made between the effects of increasing Reynolds number and increasing Schmidt number on quantities such as scalar spectra and structure functions, the statistics of scalar gradients and dissipation rate, and the implications of a random-sweeping hypothesis which provides a direct connection between Eulerian and Lagrangian viewpoints. We also examine some results on two- and multi-particle Lagrangian statistics in the problem of turbulent dispersion.