

**CENTER FOR FLUID MECHANICS
AND
THE FLUIDS, THERMAL AND CHEMICAL PROCESSES GROUP
OF
THE DIVISION OF ENGINEERING
SEMINAR SERIES**

**Professor Z. Jane Wang
Department of Theoretical and Applied Mechanics
Cornell University
Ithaca, NY**

Insect Flight: Aerodynamics, Optimization, and Evolution

Insects, like birds and fish, locomote via interactions between fluids and flapping wings and fins. Their motion is governed by the Navier-Stokes equation coupled to moving boundaries. In this talk, I will first describe how dragonflies fly: their wing motions and the flows and forces they generate. I will then consider insects in several species and discuss three questions: 1) Is insect flight optimal? 2) How does the efficiency of flapping flight compare to classical fixed-wing flight? 3) How might aerodynamic effects have influenced the evolution of insect flight?

**TUESDAY, October 23, 2007
Barus & Holley, Room 190
3:00pm**