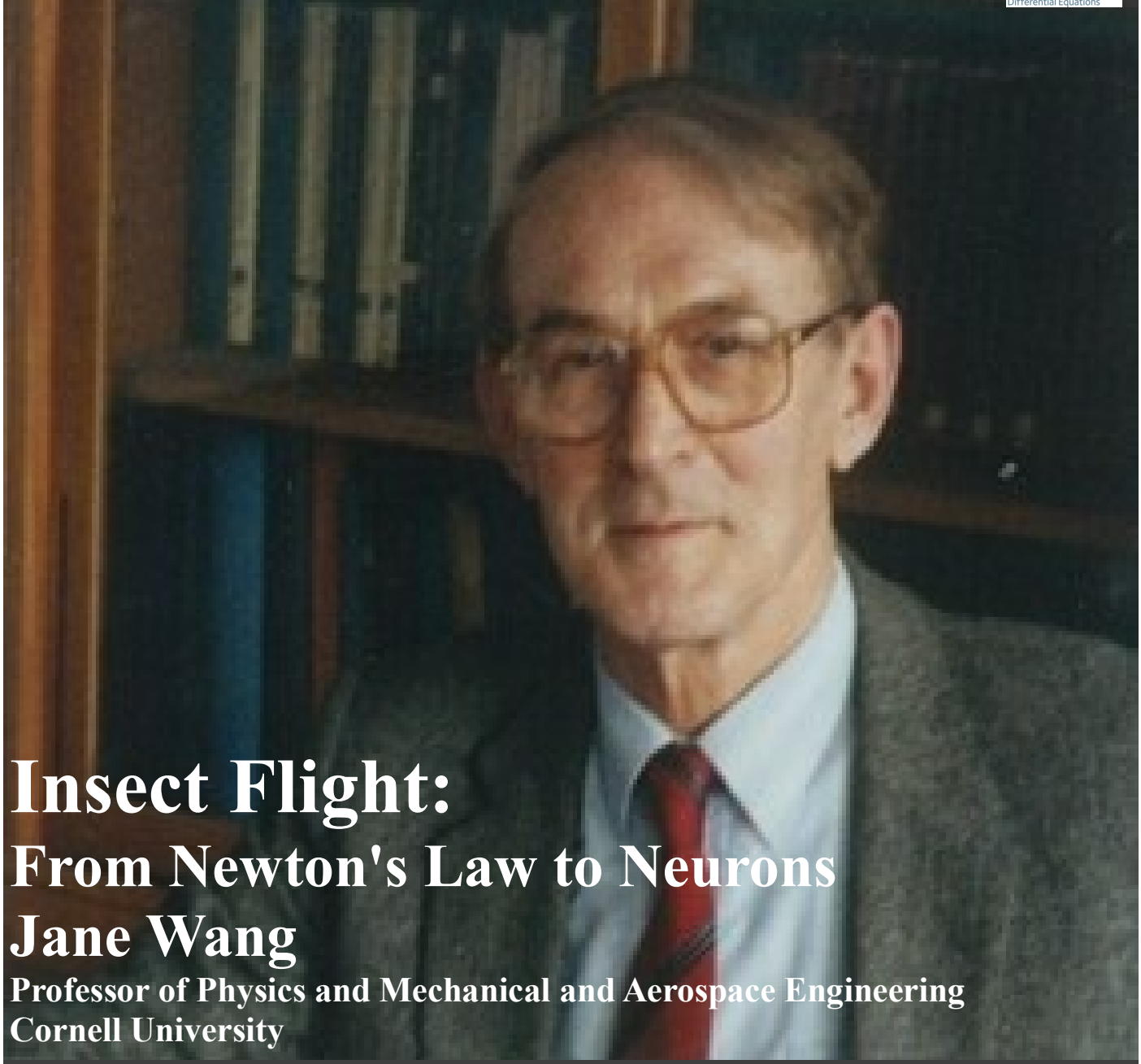
The Eleventh Brooke Benjamin Lecture on Fluid Dynamics

5pm, Wednesday 8 November 2017

Lecture Theatre 3, Mathematical Institute, University of Oxford

CDT PDE
EPSRC Centre for Doctoral Training in Partial Differential Equations



Insect Flight:
From Newton's Law to Neurons

Jane Wang

Professor of Physics and Mechanical and Aerospace Engineering
Cornell University

To fly is not to fall. How does an insect fly, why does it fly so well, and how can we infer its 'thoughts' from its flight dynamics? We have been seeking mechanistic explanations of the complex movement of insect flight. Starting from the Navier-Stokes equations governing the unsteady aerodynamics of flapping flight, a theoretical framework for computing flight leads to new interpretations and predictions of the functions of an insect's internal machinery that orchestrate its flight. The talk will discuss recent computational and experimental studies of the balancing act of dragonflies and fruit flies: how a dragonfly recovers from falling upside-down and how a fly balances in air. In each case, the physics of flight informs us about the neural feedback circuitries underlying their fast reflexes.

All are warmly invited to attend the lecture and reception that follows.