



OIST SEMINAR

Date: December 18, 2017 (Mon)

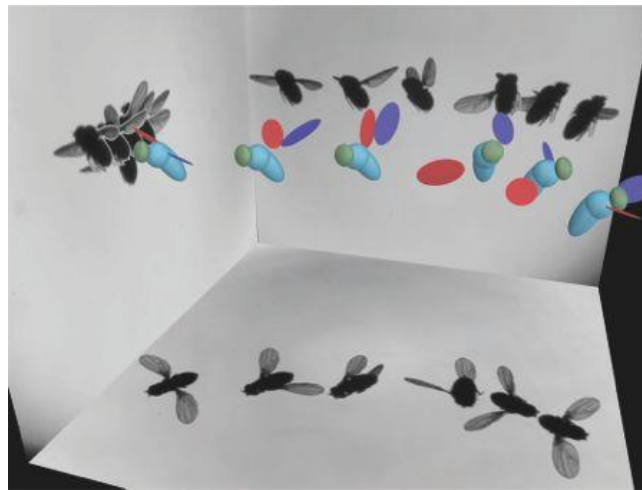
Time: 3:00 pm – 4:00 pm

Venue: C015 (Lab1, Level C)

Speaker: Professor Z. Jane Wang

(Physics, and Mechanical and Aerospace Engineering, Cornell University)

Insect Flight: from Newton's law to Neurons



Abstract:

Insects are first evolved to fly, and 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, we worked to build a theoretical framework for computing flight. This has led to new interpretations and predictions of the functions of an insect's internal machinery that orchestrate its flight. I will discuss our 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.

Contact information: Continuum Physics Unit

Kaori Egashira: (Tel) 098-966-8683 (e-mail) e-kaori@oist.jp