Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Quantifying Dragonfly Kinematics During Unsteady Free-Flight Maneuvers[1] JAMES MELFI, MAE, Cornell University, HUAI-TI LIN, MATTEO MISCHIATI, ANTHONY LEONARDO, HHMI-Janelia Farm, Z. JANE WANG, MAE and Physics, Cornell University — What make dragonflies such interesting fliers are the unsteady high-speed aerial maneuvers they perform. Until recently, the study of dragonflies in mid-flight has been limited to steady-state motions such as hovering and forward flight. In this talk, we report our kinematic analyses of the dragonfly flight recorded in a custom dragonfly arena at HHMI, Janelia Farm. Dragonfly's turning motions often involve all three degrees of freedom about its body axes: yaw, roll, and pitch. We examine the wing kinematics changes associated with different turning maneuvers, and seek the key variables in the wing kinematics that are responsible for each specific maneuver.

[1]This work is supported by a grant to ZJW and AL through the visitor program at Janelia Farm, HHMI.

Z. Jane Wang
Cornell University

Date submitted: 31 Jul 2012 Electronic form version 1.4