

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Comparing flight strategies in species of fruit flies ITAI COHEN, LEIF RISTROPH, GORDON BERMAN, Cornell University, Z. JANE WANG, Cornell University — Observing different species of fruit flies offers an opportunity to compare flight strategies for insects of varying size but of nearly identical body and wing architecture. Using automated three-dimensional high-speed videography, we have captured many beautiful flight sequences of untethered fruit flies. From this data we have extracted the complete body and wing kinematics and determined the fluid forces acting on the wings using custom-written tracking and analysis software. We find that, in addition to lift, drag plays an important role in providing the vertical force needed for these insects to stay aloft. Moreover, our data base in combination with various numerical analysis techniques is allowing us to resolve whether these insects are flapping in the most efficient manner possible. Answers to this line of questions are important for determining what role if any evolution has played in determining how these insect fly.

Itai Cohen
Cornell University

Date submitted: 24 Jan 2008

Electronic form version 1.4