

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Experimental Investigation of the Unsteady Flow Structures of Two Interacting Pitching Wings MELIKE KURT, KEITH MOORED, Lehigh Univ — Birds, insects and fish propel themselves with unsteady motions of their wings and fins. Many of these animals are also found to fly or swim in three-dimensional flocks and schools. Numerous studies have explored the three-dimensional steady flow interactions and the two-dimensional unsteady flow interactions in collectives. Yet, the characterization of the three-dimensional unsteady interactions remains relatively unexplored. This study aims to characterize the flow structures and interactions between two sinusoidally pitching finite-span wings. The arrangement of the wings varies from a tandem to a bi-plane configuration. The vortex structures for these various arrangements are quantified by using particle image velocimetry. The vortex-wing interactions are also characterized as the synchrony between the wings is modified.

Melike Kurt
Lehigh Univ

Date submitted: 01 Aug 2015

Electronic form version 1.4