

Abstract Submitted
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Hydrodynamic thrust generation by honeybee (*Apis mellifera*)¹

CHRIS ROH, MORTEZA GHARIB, California Institute of Technology — In our previous studies, we reported honeybee's locomotion at the air-water interface. Their ventrally wetted wings beat at high frequency (30-220 Hz), which propel them forward. Honeybee's locomotion on a water surface uses added mass as the dominant hydrodynamic force. Disregarding other forces, an added mass force associated with idealized sinusoidal wing kinematics is modeled. The resulting body movement shows good agreement with the experimentally measured body motion. Furthermore, body kinematics predicted based on the experimentally measured flow field under the mechanical model wing also shows similar locomotive pattern.

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