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A novel automated method for studying free-flight insect maneuvers GORDON BERMAN, LEIF RISTROPH, ATTILA BERGOU, ITAI COHEN, Cornell University, Dept. of Physics, Z. JANE WANG, Cornell University, Dept. of Theoretical and Applied Mechanics — Insects in flight often accomplish startling maneuvers via remarkably small adjustments in wing kinematics. For example, angle of attack modulations and asymmetries of less than 10 degrees can be the difference between an individual continuing forward, or entering a sharp turn. Hence, in order to study maneuvering flight in insects, a reliable, low-error method of determining body and wing kinematics is necessary. In this talk, we will describe a novel automated algorithm which extracts full, three-dimensional kinematics from high-speed video images of freely flying insects. This method is shown to be robust, fast, and versatile, with only small, well-characterized errors.

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