## Abstract Submitted for the DFD10 Meeting of The American Physical Society

Aerodynamics of flapping wings with fluttering trailing edges LIANG ZHAO, ZHENG HU, JESSE ROLL, XINYAN DENG — Our previous work on the aerodynamics of passive flexible flapping wings showed that there is a strong relationship between the dynamics of trailing edge and the size of the leading edge vortex, therefore aerodynamic forces. Here we investigated the aerodynamic effects of active trailing edges. The experiments were conducted on a model flapping wing in an oil tank. During static tests, the trailing edge bending angle was held constant from the angle of attack of the upper portion of the rigid wing. For dynamic cases, the trailing edge was controlled to flutter with a prescribed frequency and amplitude. Force measurements and PIV results show that trailing edge flexion/camber strongly correlates with the leading edge vortex and the aerodynamic forces. In addition, large instantaneous force variations are observed in the dynamic fluttering cases, suggesting that trailing edge can be used for force modulation in MAVs.

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