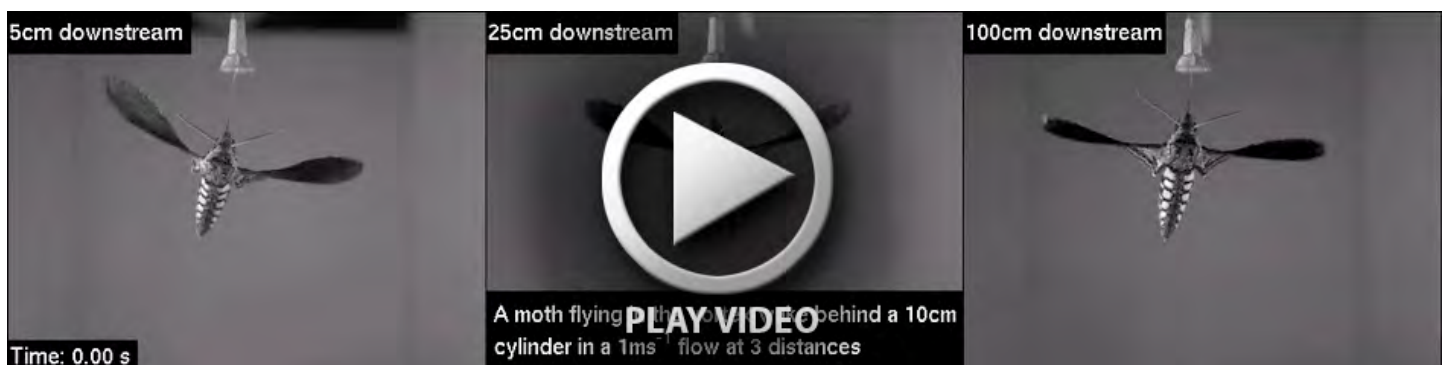




**Movie 1.** Example of a hawkmoth (individual 7) flying into a steady airflow (without a cylinder) at 0.5, 1 and 2 m s<sup>-1</sup>. Notice that the body oscillation amplitude and wingbeat flapping frequencies are barely affected under these conditions.



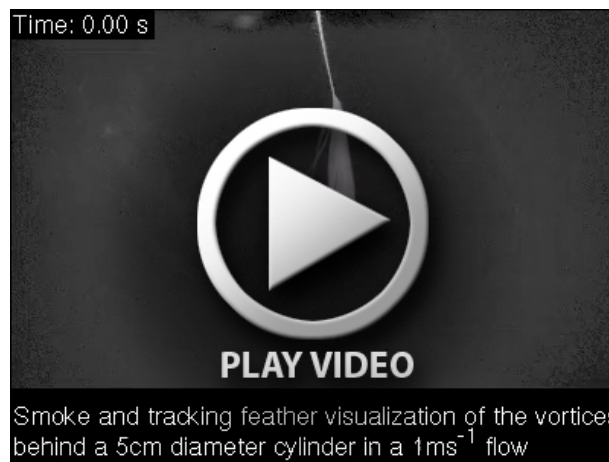
**Movie 2.** Example of a hawkmoth (individual 7) flying into a vortex wake 25 cm behind a 10 cm diameter cylinder at 0.5, 1 and 2 m s<sup>-1</sup>. Notice how the abdomen amplitude and wingbeat frequencies increase with airspeed; and the synchronization between the vortex shedding (seen as the feather oscillation in front of and below the moth) and the body yaw oscillation.



**Movie 3.** Example a hawkmoth (individual 7) flying into a vortex wake at 5, 25 and 100 cm behind a 10 cm diameter cylinder in a 1 m s<sup>-1</sup> flow. Notice that the wingbeat frequency and body oscillation amplitude decrease with downstream distance.



**Movie 4.** Example of a hawkmoth (individual 7) flying into a vortex wake 25 cm behind a 5 cm diameter cylinder at 0.5, 1 and 2 m s<sup>-1</sup>. Notice that the body oscillation amplitude slightly increases with airspeed but without evident changes on wingbeat frequency. Also, observe the absence of synchrony between feather motion and body yaw.



**Movie 5.** Smoke visualization of a feather oscillation due to vortices generated by a 5 cm diameter cylinder in a 1 m s<sup>-1</sup> flow. Notice that the feather oscillation movement is synchronized with the vortex shedding.



**Movie 6.** Smoke visualization of a moth (individual 8) flying 25 cm downstream vortex wake generated by 5 and 10 cm diameter cylinders at 1 m s<sup>-1</sup>. Notice that vortices generated by the small cylinder interact only with one wing. In contrast, vortices generated by the large cylinder typically interact with both wings.