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Wake Studies of Ornithopters ALFREDO JUAREZ, JACOB HARLOW, JAMES ALLEN, PAULO FERREIRA DE SOUSA, New Mexico State University — This paper details experiments using a mechanical ornithopter flying in a low speed wind tunnel. Experiments were conducted for a Strouhal number of 0.3 and Reynolds number of 2300, Particle Image Velocimetry (PIV) and flow visualization was used to develop quantitative and qualitative information about the nature of the wake. The data shows that the wake is made of a series of discrete vortex rings. The impulse of these rings has been estimated with PIV data and the results correlate well with the lift required to sustain the ornithopter in flight.

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