

Abstract Submitted
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Dynamics of a heaving flexible foil in a uniform flow FLORINE PARAZ, CHRISTOPHE ELOY, LIONEL SCHOUVEILER, IRPHE — Most aerial and aquatic animals produce thrust using flapping flexible appendages. The performances of such propulsion systems are strongly related to the appendages dynamics, in particular to the amplitude of the trailing edge motion and to the vortical patterns produced. A better understanding of this mode of propulsion requires to investigate the dynamics of the flexible appendages, as a response to harmonic forcing. In this context, experiments are performed with flexible foils immersed in the uniform flow of a water channel. A harmonic heaving motion, that is transverse to the foil, is then imposed to its leading edge. The response of the foil likely results from the resonance between the forcing and the natural modes of vibration. Experimental results are compared with a two-dimensional model assuming a zero-thickness flexible sheet of infinite span immersed in a potential flow.

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