

Abstract Submitted  
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**Shape and Swimming of Flexible Pitching Foils** ANDERS ANDERSEN, BJARNE BACH, Department of Physics and Center for Fluid Dynamics, Technical University of Denmark, TEIS SCHNIPPER, Department of Mechanical Engineering and Center for Fluid Dynamics, Technical University of Denmark — We present an experimental study using flexible metal foils which are driven with simple harmonic pitching oscillations in water. We vary the frequency and amplitude of the oscillations and explore the foil response at frequencies both below and above the lowest resonance frequency. We compare our observations with theoretical predictions taking into account the elastic properties of the foil and using a simple model of the fluid forces. Finally, we make use of an experimental setup in which the pitching foils are mounted on a simple carousel that allows them to rotate (swim) freely and compare our observations on the rotation (swimming) velocity with that of rigid foils performing similar pitching oscillations.

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