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On the effect of flexibility on the performance of a bio-inspired fin[1] STEFANO CHIAZZA, FLORIAN H.J. BREMER, Princeton University, ALEXANDER J. SMITS, Princeton University and Monash University — Experiments are performed to examine the flowfield characteristics of bio-inspired fins of different flexibility. The measurements are performed in a water channel at a fixed frequency of oscillation and different flow velocities covering the free-swimming condition. Thrust and efficiency measurements are complemented by PIV and flow visualizations studies. The wake topology is analyzed at different Strouhal numbers for each flexibility, and the differences between accelerating, decelerating, and free-swimming fins are identified.

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