

Abstract Submitted
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Increased Thrust through Passively Variable Tail Stiffness in Fast Starting Fish TODD CURRIER, GANZHONG MA, YAHYA MODARRES-SADEGHI, Univ of Mass - Amherst — An experimental study is conducted in the effect of tail stiffness on increased acceleration in mechanisms designed to emulate fast-start fish maneuvers. The variable stiffness is characterized by the directionality of loading. As load is applied in one direction on the fin the structure is flexible, simulating the preparatory stage of the maneuver, and as load is applied in the opposing direction the fin rigidly maintains its shape during the propulsive stage. A 3D printed fin structure is used to achieve the directional stiffness and is tested dynamically. Thrust is measured at various rates of rotation studying the influence of timing on peak acceleration.

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