

Abstract Submitted
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Swimming Performance of Toy Robotic Fish NINA PETELINA, LEAH MENDELSON, ALEXANDRA TECHET, Massachusetts Institute of Technology — HEXBUG AquaBots™ are a commercially available small robot fish that come in a variety of “species”. These models have varying caudal fin shapes and randomly-varied modes of swimming including forward locomotion, diving, and turning. In this study, we assess the repeatability and performance of the HEXBUG swimming behaviors and discuss the use of these toys to develop experimental techniques and analysis methods to study live fish swimming. In order to determine whether these simple, affordable model fish can be a valid representation for live fish movement, two models, an angelfish and a shark, were studied using 2D Particle Image Velocimetry (PIV) and 3D Synthetic Aperture PIV. In a series of experiments, the robotic fish were either allowed to swim freely or towed in one direction at a constant speed. The resultant measurements of the caudal fin wake are compared to data from previous studies of a real fish and simplified flapping propulsors.

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