

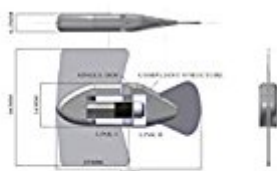
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# Robotic Fish iSplash-MICRO: A 50mm Robotic Fish Generating The Maximum Velocity Of Real Fish (High Speed Robotics. Mechanical Engineering And Kinematics For Maximum Velocity Robot Fish. Book 4)

## *Robotic Fish iSplash-MICRO*

A 50mm Robotic Fish Generating the Maximum Velocity of  
Real Fish

By Richard James Clapham



[www.isplash-robotics.com](http://www.isplash-robotics.com)



## Synopsis

iSplash-MICRO: A 50mm Robotic Fish Generating the Maximum Velocity of Real Fish Richard James Clapham  
Abstract—This paper presents a millimeter scale robotic fish, namely iSplash-MICRO, able to accurately generate the posterior undulatory pattern of the carangiform swimming mode, at intensively high frequencies. Furthermore an investigation into anterior stabilization was made in an attempt to reduce the large kinematic errors and optimize forces around the center of mass. Applying large scale dorsal and pelvic fins relative to body size enabled predictable optimization of the anterior and posterior displacements. During the field trials, the small fish with a length of 50mm has generated an equivalent average maximum velocity to real fish, measured in body lengths/ second (BL/s), greatly improving previous man-made systems, achieving a consistent free swimming speed of 10.4BL/s (0.52m/s) at 19Hz with a low energy consumption of 0.8 Watts.

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