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**Dynamic Schooling of a Tandem Pair of Heaving Hydrofoils** JOEL NEWBOLT, LEIF RISTROPH, JUN ZHANG, New York University — The reverse von Kármán wake generated by a heaving hydrofoil has recently been shown to provide stable positions to a second hydrofoil heaving in the wake (Ramanarivo et al. at NYU). Because a similar wake structure is seen for many swimming and flying animals this fluid-mediated interaction is suspected to play a role in schooling and flocking. A newly designed experimental apparatus allows us to study this interaction in the case where the two foils are powered independently so that each foil may take on a different flapping amplitude, phase and frequency. Measurements show that the stable positions of the following foil can be shifted to any arbitrary downstream position by varying only the relative flapping phase between the foils. At different relative frequencies and amplitudes the following foil exhibits several distinct trajectories. When the following foil has a lower frequency and higher amplitude than the leader the spacing between the foils can undergo a periodic trajectory. When driven at a common frequency the follower occupies stable positions in the wake of the leader. When the follower has a higher frequency the spacing between the foils is unstable, either increasing or decreasing in time, depending on the relative amplitudes and initial conditions.

Joel Newbolt  
New York University

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