

Abstract Submitted
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Formations of flapping swimmers are stabilized by lateral flow interactions JOEL W. NEWBOLT, Harvard University, JUN ZHANG, LEIF RISTROPH, New York University — How do swimming fish stay together as a school? Using experiments on a “robotic school” of two flapping hydrofoils we show that fluid-mediated interactions help the swimmers match speeds and lock into formation. Pairs of swimmers are stabilized in all planar arrangements, including tandem (in-line), abreast (side-by-side) and diagonal, and the cohesion effect extends over surprisingly long ranges streamwise and laterally. Viewing larger groups as built up from many such pairwise interactions suggests that schools may cohere together even if the swimmers are positioned rather randomly, which could explain why schools of fish seem to be disordered.

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