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Anand U Oza*, oza@njit.edu, and **Eva Kanso** and **Michael Shelley**. *Traveling waves in a continuum model of 1D schools.*

We construct and analyze a continuum model of a 1D school of flapping swimmers. Our starting point is a delay differential equation that models the interaction between a swimmer and its upstream neighbors' wakes, which is motivated by recent experiments in the Applied Math Lab at NYU. We coarse-grain the evolution equations and derive PDEs for the swimmer density and variables describing the upstream wake. We study the equations both analytically and numerically, and find that a uniform density of swimmers destabilizes into a traveling wave. Our model makes a number of predictions about the properties of such traveling waves, and sheds light on the role of hydrodynamics in mediating the structure of swimming schools. (Received July 30, 2018)