1067-92-317 **Chad M. Topaz*** (ctopaz@macalester.edu), Macalester College, Deptartment of Mathematics, Statistics, & CS, 1600 Grand Ave., St. Paul, MN 55105, and **Andrew J. Bernoff** (ajb@hmc.edu), Harvey Mudd College, Dept. of Mathematics, 301 Platt Blvd., Claremont, CA 91711. *Asymptotic dynamics of attractive-repulsive swarms.*

We classify and predict the asymptotic dynamics of a class of swarming models. The model consists of a conservation equation in one-dimension describing the movement of a population density field. The velocity is found by convolving the density with a kernel describing attractive-repulsive social interactions. The kernel's first moment and its limiting behavior at the origin determine whether the population asymptotically spreads, contracts, or reaches steady-state. For the spreading case, the dynamics approach those of the porous medium equation. The widening, compactly-supported population has edges that behave like traveling waves whose speed, density and slope we calculate. For the steady states we calculate analytic expressions for the swarm density when the kernel is a Morse potential, a common model of attraction and repulsion. For the contracting case, the dynamics of the cumulative density approach those of Burgers' equation. We derive an analytical upper bound for the finite blow-up time after which the solution forms one or more δ-functions. (Received August 20, 2010)