1125-VM-1470 **Edward Martinez***, School of Mathematical & Statistical Sciences, Box 871804, Arizona State University, Tempe, AZ 85287, **Scott Mahan**, School of Mathematical & Statistical Sciences, Box 871804, Arizona State University, Tempe, AZ 85287, and **Kevin Winseck**, School of Mathematical & Statistical Sciences, Box 871804, Arizona State University, Tempe, AZ 85287. *Optimized Control of Flocking Models.* Preliminary report.

In flocking models, agents interact according to a set of rules which lead them to an equilibrium in velocity. We examine how different rules affect flocking behavior. Our model consists of a 3-zone Cucker-Smale model with self-propulsion. We introduce a novel optimized control that aims to minimize an appropriate energy functional in the system. For instance, to facilitate flocking, the energy is taken as the variance in velocity of the system. We use a Lagrangian formulation to solve numerically the optimization problem. The numerical implementation uses a combination of forward/backward Euler's method. The control greatly reduces the variance in velocity and also in position creating a more coherent flock. (Received September 17, 2016)