Abstract Submitted
for the FWS17 Meeting of
The American Physical Society

Kilobot as a single autonomous agent for testing collective motion
IMRAN KHAN, KYLE SHAW, AJAY GOPINATHAN, SAYANTANI GHOSH, Univ of California - Merced — Over the last few decades, research on the topic of collective dynamics of active systems has spanned many disciplines such as physics, mathematics, computer science, biology and robotic engineering. One of the main reasons for the broad interest in this subject derives from its natural origins in the form of flocks, swarms, and crowds. In general, these natural systems are composed of single, autonomous organisms that communicate only locally, but form extended collective mobile groups capable of collective decision-making and displaying highly nontrivial dynamics over a wide range of length and time scales. This sort of decentralized, leaderless decision-making and collective action has inspired efforts especially in the area of robotic drones. In this work, we will show the application of Kilobot as a single autonomous agent to execute the swarming or collective transport algorithms. Kilobot is a small, low-cost robot, which has a limited communication range with the surrounding neighbors. These robots can work in a group of a thousand and they all execute the same program simultaneously, where a specific program is sent to them through the infra-red communication channel.

Imran Khan
Univ of California - Merced

Date submitted: 29 Sep 2017 Electronic form version 1.4