

abstract

COMPUTER SCIENCE/DISCRETE MATH I

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

We bound the time it takes for a group of birds to reach steady state in a standard flocking model. We prove that

- (i) within single exponential time fragmentation ceases and each bird settles on a fixed flying direction;
- (ii) the flocking network converges only after a number of steps that is an iterated exponential of height logarithmic in the number of birds.

We show that this bound is optimal. The model directs the birds to adjust their velocities repeatedly by averaging them with their neighbors within a fixed radius. The model is deterministic, but we show that it can tolerate a reasonable amount of stochastic or adversarial noise.