

Title: Self-organization in a system of microswimmers

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Abstract: Several light-emitting robots are exploring an area. Each robot keeps changing the direction of its motion at random, and adapts its speed to the amount of light shining on it. The speed change occurs with a delay. It turns out that the delay affects the collective behaviors of the robots. And if the delay becomes negative? I will explain what negative delay means and how it may cause a dramatic change in the way the robotic swarm moves. This phenomenon has been observed in a laboratory, and motivates new experiments. I will outline an open problem which I propose as a second-year project for graduate students.