

**Ben-Gurion University of the Negev
Blaustein Institutes for Desert Research**

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Chaos and Levy walks in swarming bacteria

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Abstract

Bacterial swarming is a collective mode of motion in which cells migrate rapidly over surfaces. Swarming is typically characterized by densely packed groups moving in coherent patterns of whirls and flows. Recent experiments showed that within such dense swarms, bacteria are performing super-diffusion that is consistent with a Levy walk. We present a simple model suggesting that chaos and Levy walking are a consequence of group dynamics. Mathematically, the model presents a new mechanism for Levy walks in chaotic maps that are reversible but not volume preserving. Biologically, it explains how cells can fine-tune the geometric properties of their trajectories.

Date & Location:

Tuesday, November 6, 2018, 11:00

Lecture room, Physics Building (ground floor)

