

1116-VM-2522

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Mathematical and Computational Modeling of Bacterial Motility and Swarming. Preliminary report.

Computational models play an important role in understanding bacterial movement. For example, the very social *Myxococcus xanthus*, a bacterium commonly found in soil and known for its multicellular interactions, can be modeled using the subcellular element method. I will present an implementation of this model and show how it can be used to study the effects of cell flexibility, cell-cell adhesion, and cellular reversal periods on cell-cell interactions. To characterize cell-cell interactions, the contacts between cells in simulations are analyzed to determine how these properties influence the populations' ability to form and keep cell-cell connections. (Received September 22, 2015)