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Role of cell bending and slime navigation in swarms of *M. xanthus* [1] CAMERON HARVEY, University of Notre Dame, DALE KAISER, Stanford University, MARK ALBER, University of Notre Dame — Many bacteria use motility described as swarming to colonize surfaces that allows them to optimize their access to nutrients. The swarming of the bacterium *M. xanthus* on surfaces is a remarkable interplay between motility mechanisms, cell flexibility, cell-cell adhesive interactions and directional reversals. The properties of individual cells from different mutant strains and density regimes will be demonstrated in this talk. Then, a computational model based on subcellular elements for cell representation and implemented on graphical processing units (GPUs) will be presented. High-quality high magnification movies of bacterial motility together with biologically justified computational simulations will be used for investigation of collective motion and order in swarming populations of bacteria. Collective motion will be shown to include the dynamical formation of cell clusters as well as streams of cells moving over networks of cell-generated slime tracks.

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