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**Matthew A Moreno\*** (mamoreno@pugetsound.edu), 4029 Wheelock Student Center, University of Puget Sound, Tacoma, WA 98416, and **Jason M Graham** and **S Garnier**. *Modeling the Collective Behavior of Ants on Uneven Terrain*. Preliminary report.

Ant foraging behavior is a collective decision making process in which, through individual interactions between ants and pheromone deposition, a colony of ants selects and exploits a path to follow between their nest and a food source. Research into the collective decision making strategies of ants, in addition to characterizing the biological mechanisms and emergent properties of the foraging process, has the potential to be leveraged into applications such as swarm robotics and commercial logistics management. Although ant foraging behavior has been extensively studied on flat terrains, ant foraging over uneven terrains is not well studied. This research presents an individual-based set of differential equations to model ant foraging behavior over uneven terrain in an enclosed arena. This model is employed to investigate the characteristics of foraging paths that ants tend towards when foraging over simple inclines of varying magnitudes. Numerical solutions of the model predict that, over most inclines, ants tend to favor the direct path between nest and food. (Received September 13, 2016)