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**Subekshya Bidari\*** (subi3192@colorado.edu). *Effects of Spatial Structure of the Hive in the Recruitment Process of Honeybee Colonies.*

Honey bees make decisions regarding foraging and nest site selection in groups ranging from hundreds to thousands. To effectively make these decisions bees need to be able to communicate with each other within a spatially distributed group. Honeybees use a form of dance language to communicate information regarding the quality of alternatives they are deciding between. A dancing bee can communicate the quality, location and distance of the alternative they have discovered to recruit uncommitted bees in the group. We analyze this effect in the recruitment process due to the spatial structure of an enclosed hive. Our models range from treatment of the hive as a collection of discrete patches to a model of hive as a continuous unit where information is propagated through the group as they move diffusively. We report a combination of asymptotic results obtained using timescale separation techniques as well as numerical simulations that agree well with our theory. We find that the spatial structure of the hive and the statistics of bees' motion within the hive can strongly determine the rate of recruitment and consolidation of decision consensus. (Received March 03, 2020)