1156-92-153 **Igor V. Erovenko***, igor@uncg.edu, and **Johann Bauer**, **Mark Broom**, **Karan Pattni** and **Jan Rychtar**. *The effect of network topology on optimal exploration strategies and the evolution of cooperation in a mobile population.*

We model a mobile population interacting over an underlying spatial structure using a Markov movement model. Interactions take the form of public goods games, and can feature an arbitrary group size. Individuals choose strategically to remain at their current location or to move to a neighboring location, depending upon their exploration strategy and the current composition of their group. This builds upon previous work where the underlying structure was a complete graph (i.e., there was effectively no structure). Here, we consider alternative network structures and a wider variety of, mainly larger, populations. Previously, we had found when cooperation could evolve, depending upon the values of a range of population parameters. In our current work, we see that the complete graph considered before promotes stability, with populations of cooperators or defectors being relatively hard to replace. By contrast, the star graph promotes instability, and often neither type of population can resist replacement. We discuss potential reasons for this in terms of network topology. (Received January 21, 2020)