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Allison Sullivan*, 1 College Street, PO Box: 2792, Worcester, MA 01610, and **David Damiano** (ddamiano@holycross.edu), Department of Mathematics & Computer Science, College of the Holy Cross, 1 College St., Worcester, MA. *Topological Modeling of Force Networks in Granular Material*. Preliminary report.

The aggregate properties of granular materials are determined by the network of forces between particles. These networks are prominent in a number of fields, including the pharmaceutical and agricultural industries. Force networks are, however, not well understood. The random organization of these networks makes it difficult to derive properties of a granular material from the local structure of its force network. Here, the method of swatch and cloth is instrumental. Swatch and cloth is a new and promising technique developed by Schweinhart et. al. It can be used to accurately describe a force network by analyzing the statistics of the local structure of the network's adjacency graph. We used this method to analyze and compare the force networks of planar simulations of granular material. In addition, we analyzed the related community structure of these networks. (Received September 26, 2017)