1154-70-2201 **Patrycja A Przewoznik*** (paprze21@g.holycross.edu), 1 College Street, College of the Holy Cross, Worcester, MA 01610, and **David B Damiano**. *Structural Analysis of the force chains within communities of particles.* Preliminary report.

Granular materials are collections of macroscopic particles in contact with each other which exhibit a variety of behaviors. Granular materials can act as solids, liquids or gases, depending on the physical circumstances and can exhibit complex behaviors which have not yet been sufficiently explained. In order to improve the understanding of interactions between the particles, we provided a mathematical analysis of the structures created by the forces between the particles from an experiment performed on a set of photoelastic disks by Dr. Eli Owens at North Carolina State University. Randomly distributed disks placed in a flat upright container were subject to consecutively increased pressure in each trial caused by weight applied on top of the container. In each case, the forces due to pressure create unique structures called force chains which combine into force networks. To study the changes in those force networks, we tracked individual disks along the pressures. We grouped the disks into communities to study the changes in the force chains across pressure levels. We applied two different versions of the community detection algorithm based on the Newman-Girvan and geographical null models to obtain two sets of communities along all pressures. (Received September 17, 2019)