1125-AH-365 **Jonathan M Gerhard*** (gerha2jm@dukes.jmu.edu) and **Laura Taalman**. *Visualizing Homotopies with 3D Printing.* Preliminary report.

A key interest in algebraic topology is determining whether two spaces are homotopy equivalent, i.e. does there exist a continuous deformation from one space to the other? The classic example of two objects which are homotopy equivalent is the donut and the coffee mug, which might not be so easy to see. We can determine that two spaces are homotopy equivalent by defining the homotopy between them, but this is often incredibly difficult to visualize. For example, if we remove a torus T^2 from the 3-sphere S^3, then the space we are left with is homotopy equivalent to the space of two disjoint solid tori! In order to visualize some of these difficult homotopies, we use 3D-printing to create a series of models which allow us to get an intuitive grasp on the deformation involved. (Received August 29, 2016)