1145-92-252 **Megan J Chambers*** (mjchambe@ncsu.edu), 1241 Trillium Cir., Apartment J, Raleigh, NC 27606. *Analyzing the Structural Properties of Pulmonary Arterial Networks.*

From micro CT images of a mouse lung, one can visualize the pulmonary arterial network as a tree-like structure. In collaboration with Kitware, Inc., we have been able to use 3D Slicer, an open source image analysis software, to extract the representative graph structures from these images. We also obtained the spatial point cloud, including the (x,y,z) coordinates, for these networks as well as the vessel radii at those points. While the overall pattern of a branching tree is apparent in the images, the exact topological and geometric structure of the networks varies widely due to experimental conditions and parameters set during the segmentation process. In this poster, we explore the various geometric and topological relationships that may hold in the vessel network. Our work is based on Olufsen *et al.* (2000), which hypothesizes that the arteries form a fractal like "structured tree", whose pattern is generated by quantifying certain geometric parameters of the vessels, such as scaling factors for radii and length to radius ratio. Moreover, Olufsen *et al.* assumes that the structured tree parameters remain constant throughout the network, and in this poster we examine the validity of these hypotheses. (Received August 24, 2018)