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**Sarah J. Tymochko\*** (sjtymo17@g.holycross.edu) and **David B. Damiano.** *A Topological Analysis of Retinal Vasculature.* Preliminary report.

Vasculature in the retina can be used to screen for diseases such as diabetic retinopathy and glaucoma. Healthy retinal blood vessels are straight or slightly curved but diseased vessels have increased tortuosity and curvature. We propose a new method of detecting tortuosity and distinguishing between healthy and diseased vasculature using techniques from topological data analysis including zero dimension persistence homology. This method is applied to a dataset of fundus images of retinas that are healthy or diseased with diabetic retinopathy or glaucoma. (Received September 20, 2016)