1145-92-2107 **Carolyn M Eady*** (ceady@math.fsu.edu), Florida State University, Department of Mathematics, 1017 Academic Way, Tallahassee, FL 32306. *Discrete Conformal Invariants on Triangle Meshes of Brain Data.*

The human brain is highly folded, making visualization difficult. We employ discrete conformal methods to map three-dimensional cortical surface data in the form of triangulated meshes. Using the quasi-conformal method of circle packing, we map the cortical surface to a desired constant curvature surface. We calculate discrete conformal invariants, such as harmonic measure. To calculate harmonic measure, we simulate random walks on a triangulated mesh and measure the probability that a walk exits through each boundary edge, as well as investigate the distribution of the number of times it takes each walk to reach the boundary. By calculating such invariants across data sets, we can compare and contrast between healthy and diseased brains to determine macro-scale abnormalities.

We also discuss methods for comparing two cortical surfaces using a distortion metric. This uses a composition of conformal mappings, under which a distortion energy function must be minimized. Previously this work has been applied to closed surfaces; we give a proof of concept for extending it to open surfaces. (Received September 24, 2018)