1040-53-242 **Washington Mio*** (mio@math.fsu.edu), Department of Mathematics, Florida State University, Tallahassee, FL 32306-4510, **X. Liu**, Department of Computer Science, Florida State University, Tallahassee, FL, **Y. Shi**, Laboratory of Neuro Imaging, Department of Neurology, UCLA School of Medicine, Los Angeles, CA , and **I. Dinov**, Laboratory of Neuro Imaging, Department of Neurology, UCLA School of Medicine, Los Angeles, CA. *Shape Spaces of Elastic Spherical Surfaces.* Preliminary report.

We discuss the construction of a shape space of elastic surfaces of genus zero and applications of the model to the analysis and visualization of the anatomy of the human brain. The shape space is equipped with a family of geodesic metrics that encode the resistance offered by the shapes to deformations by stretching and bending. Global shape dissimilarities are quantified by geodesic distances, but the geodesic deformation fields allow us to develop localization tools to identify the regions where the most significant morphological differences occur. Geodesic interpolations enable us to visualize shape deformations and are also used in the estimation of mean shapes and in the construction of anatomical atlases of the human brain. (Received March 10, 2008)