962-92-1221 **Monica Hurdal*** (mhurdal@math.fsu.edu), **Ken Stephenson**, **Phil Bowers** and **De Witt Sumners**. *Quasi-conformal Flat Maps of the Human Brain from Circle Packings.*

It is known that functional activity of the human brain mainly occurs on the brain surface in the thin sheet called the grey matter. In addition, the surface is highly convoluted with many folds and fissures that vary in shape and location from person to person. The complexity of the brain surface and the individual variability makes it difficult to localize and compare functional activity between individuals. "Unfolding" and flattening the cortical surface can assist in identifying functional foci obtained from PET and functional MRI data. It is impossible to flatten a surface embedded in 3-space without introducing areal and linear distortion. However, the Riemann Mapping Theorem states that conformal (angle-preserving) maps exist. We are using software that finds the circle packing of a triangulated surface to obtain an initial approximation of the conformal (flat) map of the cerebellum. These maps can be created in the Euclidean and hyperbolic planes and on a sphere. Some of the topological and computational aspects of producing these maps will be discussed and quasi-conformal maps of the human cerebellar surface will be presented. (Received October 02, 2000)