1086-53-1562 **Yonggang Shi*** (`yshi@loni.ucla.edu`), **Rongjie Lai** and **Arthur Toga**. *Conformal Metric Optimization on Surfaces (CMOS) for Mapping Neuroanatomical Shapes.*

In this work, we present a novel method for surface mapping and its application in group studies of neuroanatomical surfaces. Using Laplace-Beltrami eigen-functions, we first construct an intrinsic embedding of 3D surfaces. To account for non-isometry differences between surfaces, we iteratively optimize the conformal metrics on surfaces and find the maps in the embedding space. We will demonstrate the novel mapping algorithm on studying various brain shapes in clinical applications. (Received September 23, 2012)