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**Washington Mio\*** ([mio@math.fsu.edu](mailto:mio@math.fsu.edu)), Department of Mathematics, Florida State University, Tallahassee, FL 32306-4510. *Taming Shapes and Understanding Their Variation.*

Identification of shape and quantification of morphological variation are problems that arise in a variety of contexts. Problems such as understanding development, evolution and inheritance of phenotypic traits, quantifying normal and pathological changes in the anatomy of organs and tissues, recognizing objects in images, all involve shape analysis. Shapes of interest also may be quite irregular, as exemplified by those often found in gene expression domains or in noisy scans of objects. Thus, a companion problem is that of regularizing shapes to make them more manageable and amenable to analysis.

In this talk, we will discuss several developments in interpolation techniques for taming shapes, shape spaces and metrics that provide a framework for modeling shape variation, and methods to select shape metrics best suited to a particular problem. We also will illustrate the methods with applications to biology and medical imaging. (Received December 04, 2012)