## Size Minimization

Thierry De Pauw Université Parid-Sud, France e-mail Thierry.De-Pauw@math.u-psud.fr Robert Hardt Rice University, USA e-mail hardt@rice.edu

A k dimensional rectifiable current is given by an oriented k dimensional rectifiable set M together with a positive integer-valued density function  $\theta$ . The "mass" of the current is then the integral of  $\theta$  over M (with respect to k dimensional Hausdorff measure). In 1960 Federer and Fleming proved the existence of a rectifiable current of least mass for a given boundary. The "size" of the current is the k dimensional Hausdorff measure of M. Size was introduced by Almgren (and Federer) as a way of using currents to model soap films. We will discuss various results by F.Morgan (1989) and by us (2001) on the existence and partial regularity of size minimizers. **Presented by Robert Hardt**