Katherine Brubaker* (kbrubaker@ehc.edu). Uniform estimates for the Monge-Ampère foliation on a compact Kähler manifold.

The tradition of studying equations of the form $(\bar{\partial} \partial u)^n = 0$ via an associated foliation goes back to Bedford and Kalka. Dirichlet problems of an analogous “Monge-Ampère type” have played an important role in Kähler geometry. However, on a compact Kähler manifold $M$, such equations may not have even $C^2$ solutions.

A smooth solution to the homogeneous complex Monge-Ampère equation on $\overline{U} \times M$, where $U \subset \mathbb{C}$ is the unit disk, corresponds to a “Monge-Ampère foliation” of $U \times M$ by holomorphic disks. In a 2002 paper, Donaldson leveraged this foliation to show that the set of boundary functions for which a smooth solution exists is open.

To continue this line of inquiry, we prove uniform estimates on the leaves of Monge-Ampère foliations, showing that sequences of leaves converge to holomorphic disks. The goal is to understand, for a sequence of boundary functions, when the associated foliations converge to a Monge-Ampère foliation. (Received September 17, 2019)