Liouville and Calabi-Yau type theorems for complex Hessian equations

Sławomir Kołodziej (joint work with Sławomir Dinew)

Abstract

We prove a Liouville type theorem for entire maximal m-subharmonic functions in $\mathbb{C}^n$ with bounded gradient. This result, coupled with a standard blow-up argument, yields a (non-explicit) a priori gradient estimate for the complex Hessian equation on a compact Kähler manifold. This terminates the program, initiated by Hou,Ma, Wu, of solving the non-degenerate Hessian equation on such manifolds in full generality. We also obtain, using our previous work, continuous weak solutions in the degenerate case for the right hand side in some L^p, with sharp bound on p.