Weak solutions to the complex Hessian equation

Ngoc Cuong Nguyen

Jagiellonian University, Poland
ngoccuong2011@gmail.com

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The complex Hessian equation in a bounded domain $\Omega \subset \mathbb{C}^n$ is, for $1 \leq m \leq n$, looking for the real valued function u such that

$$\left(i\partial\bar{\partial}u\right)^m \wedge \beta^{n-m} = f\beta^n,$$

where $\beta = i\partial\bar{\partial}\|z\|^2$, and $0 \leq f$ is a given function. The left hand side still makes sense for bounded functions in an appropriate class (m-subharmonic functions). In general, they will be Radon measures. Thus, it is natural to study the weak solution aspects of the equation with degenerate right hand sides.

I will talk on recents results of weak solutions to the complex Hessian equation on a bounded domain in $\mathbb{C}^n$. Following the work of Dinew and Kołodziej we are making use of the complex Monge-Ampère to deal with the complex Hessian equation. The results are focused on the existence of bounded, continuous and Hölder continuous solutions of the Dirichlet problem for the equation when the right hand side might be in L^p, $p > n/m$, or just a Borel measure. These ones can be considered as counterparts of corresponding resutls of the complex Monge-Ampère equation.