VISCOSITY SOLUTIONS TO COMPLEX HESSIAN EQUATION

Frunza Ataev

Abstract

We study viscosity solutions to complex Hessian equations. In the local case, we consider Ω a bounded domain in $\mathbb{C}^n$, β the standard Kahler form in $\mathbb{C}^n$ and $1 \leq m \leq n$. Under some suitable conditions on F, g, we prove that the equation $(dd^c\varphi)^m \wedge \beta^{n-m} = F(x,\varphi)\beta^n, \varphi = g$ on $\partial\Omega$ admits a unique viscosity solution modulo the existence of subsolution and supersolution. If moreover, the datum is Hölder continuous then so is the solution. In the global case, let (X,ω) be a compact Hermitian homogeneous manifold where ω is an invariant Hermitian metric (not necessarily Kahler). We prove that the equation $(\omega + dd^c\varphi)^m \wedge \omega^{n-m} = F(x,\varphi)\omega^n$ has a unique viscosity solution under some natural conditions on F.