

abstract

SPECIAL MINI-COURSE IN GEOMETRIC PDE

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Manifolds with geometric structure carry large and useful families of non-standard ϕ -subharmonic functions. For example, any almost complex manifold with hermitian metric carries plurisubharmonic functions. Moreover, it also carries ϕ -Lagrangian subharmonic functions whose restrictions to Lagrangian submanifolds are subharmonic. Similarly, a manifold with calibration φ carries ϕ - φ -plurisubharmonic functions which are subharmonic on all calibrated submanifolds. In all cases the extremals in these families, the ϕ -harmonic functions, are interesting and often satisfy a basic non-linear second-order equation. I will discuss the Dirichlet Problem for such harmonic functions on bounded domains in a riemannian manifold. Existence and uniqueness will be established for quite general second-order equations. The result holds for all continuous boundary data subject to a geometric F -convexity of the boundary, defined entirely in terms of the equation F . Examples include all branches of the Monge-Ampère equation over \mathbb{R} , \mathbb{C} and \mathbb{H} , and all branches of the special lagrangian potential equation. The mini-course will be in two parts. The first will discuss the Dirichlet problem for domains in \mathbb{R}^n . The second will treat domains in general riemannian manifolds.