Departmental Colloquium

Speaker:

Dr. Francois Hamel

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Thursday, March 27

12:00 p.m., HH-3017

Do The Positive Solutions of Elliptic PDEs in Convex Domains Have Convex Level Sets ?

Abstract:

In this talk, I will discuss some geometrical properties of positive solutions of semilinear elliptic partial differential equations in bounded convex domains or convex rings, with Dirichlet-type boundary conditions. A solution is called quasiconcave if its superlevel sets are convex. I will review some classical properties and positive results and I will present the main elementary steps of a counterexample, that is a case of semilinear elliptic equations for which the solutions are not quasiconcave. This talk is based on a joint work with N. Nadirashvili and Y. Sire.