*NOTE CHANGED DATE AND TIME:*

**DIFFERENTIAL GEOMETRY/PDE SEMINAR**

Thursday, January 22, 2009
Padelford C-36
11:00–12:00am

# Fully nonlinear integro-differential equations

**Luis Silvestre**
(University of Chicago)

We study nonlinear integro-differential equations. Typical examples are the ones that arise from stochastic control problems with discontinuous Levy processes. We can think of these as nonlinear equations of fractional order. Indeed, second order elliptic PDEs are limit cases for integro-differential equations. Our aim is to extend the theory of fully nonlinear elliptic equations to this class of equations. We are able to obtain a result analogous to the Alexandroff estimate, Harnack inequality and $C^{1,\alpha}$ regularity. As the order of the equation approaches two, in the limit our estimates become the usual regularity estimates for second order elliptic PDEs. This is a joint work with Luis Caffarelli.

For more information about this seminar, visit the DG/PDE Seminar Web page (from the Math Department home page, `www.math.washington.edu`, follow the link **Seminars, Colloquia, and Conferences**).

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