1109-60-39 **Rodrigo Banuelos*** (banuelos@math.purdue.edu), Purdue University, West Lafayette, IN 47906, and **Dante DeBlassie**. *Geometric/analytic properties of ground state eigenfunctions for the fractional Laplacian.*

A classical result of Brascamp and Lieb asserts that the ground state eigenfunction for the Laplacian on convex domains is log-concave. This result has been extended in many directions in the PDE literature. Probabilistically, it can be obtained from similar properties for the finite dimensional distributions of Brownian motion. Several years ago the speaker raised similar questions for stable processes of order $0 < \alpha < 2$. Over the years these questions have received considerable attention from people in PDE and probability. In this talk we explain some of these problems and give an outline of a recent result of D. DeBlassie and the speaker on the superharmonicity of the ground state eigenfunction for the fractional Laplacian or order $\alpha = 2/m$ ($m > 2$ and integer) in Lipschitz domains. This result was first proved for the unit interval in the real line and $\alpha = 1$ by T. Kulczycki and the speaker in 2004 and for the unit ball in any dimension by M. Kaßmann and L. Silvestre (2014). (Received January 15, 2015)