Meeting: 1000, Albuquerque, New Mexico, SS 12A, Special Session on Regularity in PDEs and Harmonic Analysis

1000-35-192 **Donatella Danielli*** (`danielli@math.purdue.edu`), Department of Mathematics, Purdue University, 150 N. University St., West Lafayette, IN 47907, and **Arshak Petrosyan**. *Variational inequalities and free boundaries for the p-Laplace operator.*

In the theory of non-Newtonian materials the analysis of the appropriate energy leads to a class of nonlinear equations with degenerate ellipticity. In this talk we will present some recent results on the regularity of the solution and of its free boundary in a nonlinear formulation of the Alt-Caffarelli minimum problem. We will also discuss uniform properties and limits of a related singular perturbation problem for the p-Laplace operator. (Received August 24, 2004)