



Colloquium Series



Dr. Emer Lopera

Universidad Nacional de
Colombia - Manizales

Applications of the degree theory and mountain pass lemma to s-fractional p-Laplacian problems

Abstract: The aim of this talk is to give a brief introduction to the degree theory and the mountain pass lemma. To illustrate this theory, we shall prove two theorems concerning the existence of positive solutions to a quasilinear problem. In fact, both statements are very similar but their proofs differ in the methods. In the first approach, we define an appropriate functional and prove that this has mountain pass structure. Thus we have a solution to our problem. Then, by using regularity results, we prove that this solution is positive. For the proof of second theorem the authors use the degree theory. Its application for this particular problem mainly relies on a priori uniform bounds in L^∞ .

Keywords: degree theory, mountain pass lemma, fractional p-Laplacian, positive solutions.

Wednesday, October 11, 1:05 – 1:50 pm in 4-2-314