Analysis Seminar

Multiple ordered solutions for a class of problems involving the 1-Laplacian operator

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Abstract. We present recent results on multiplicity of solutions for the following class of problems involving the 1-Laplacian operater:

$$\begin{cases} -\Delta_1 u = \lambda f(u) & \text{in } \Omega, \\ u \geq 0 \text{ in } \Omega, \ u = 0 \text{ on } \partial\Omega, \end{cases}$$

where Ω is a bounded smooth domain of $\mathbb{R}^N$, $N \geq 1$, $\lambda > 0$ is a parameter and the nonlinearity $f : \mathbb{R} \to \mathbb{R}$ is a continuous function that can change sign and satisfies an area condition. We use minimax methods, comparison arguments and an approximation result to show multiplicity of solution.

This is joint work with Giovany M. Figueiredo (Universidade de Brasília, Brasília) and Marcos T. O. Pimenta (Universidade Estadual Paulista, Presidente Prudente).