

ANALYSIS SEMINAR

Multiplicity of solutions to a Schrödinger problem with square diffusion term

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On-line at Zoom

Abstract. The aim of our talk is to discuss about the multiplicity and non-existence of solutions for a parameterized quasilinear Schrödinger equation in the presence of a square diffusion and indefinite superlinear term, given by:

$$\begin{cases} -\Delta u - \frac{\kappa}{2}u\Delta u^2 = f(x)|u|^{p-2}u & \text{in } \Omega, \\ u = 0 & \text{on } \partial\Omega. \end{cases}$$

Due to the presence of the quasilinear term, we can no longer work on the standard Sobolev spaces to show existence and non-existence of solutions. We overcome these difficulties by using perturbations arguments, Nehari sets and nonlinear Rayleigh quotients.

Joint work with Carlos Alberto Santos and Kaye Silva.