SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 14 de Julho (quinta-feira), às 13H30, na sala 6.2.33

Remarks on the Ambrosetti-Prodi periodic problem

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Abstract:

In 2011 a very interesting note of Antonio Ambrosetti in honor of Giovanni Prodi appeared along with a list of open questions about global inversion theorems and their applications. One of these questions regards the study of the periodic Ambrosetti-Prodi problem for an ordinary differential second order equation. Our contribution to this problem concerns the study of the equation: $u'' + f(u) = p(t)$ where $p(t)$ is a $T-$periodic stepwise forcing term and the nonlinearity f is a locally Lipschitz continuous function such that $f(0) = 0$, $f(s) > 0$ for all $s \neq 0$, $\lim_{s \to \pm\infty} f(s) = +\infty$ and it is strictly decreasing for $s \leq 0$ and strictly increasing for $s \geq 0$. Assuming that the nonlinear term is a positive function with global minimum at zero which satisfies the previous growth conditions, we prove under suitable conditions on $p(t)$ the existence of infinitely many periodic solution. Moreover, we show the presence of chaotic-like dynamics via topological methods. Joint work with Fabio Zanolin (Univ. Udine).

Local: Departamento de Matemática, C6 - Piso 2, 6.2.33