



Mês de: **DEZEMBRO 2012**

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 13 de Dezembro (quinta-feira), às 13h30, na Sala B3-01

Heteroclinic solutions for the Swift-Hohenberg equation with multiwell potentials

Sunra J. N. Mosconi

(Univ. Catania/CMAF)

Abstract:

Given a smooth potential $F \geq 0$, we study the existence of heteroclinic solutions to the fourth order equation

$$u'''' - \beta u'' + F'(u) = 0, \quad (1)$$

which, when $\beta \leq 0$, is known as the Swift-Hohenberg equation. For any two zeros $z_{\pm} \in F^{-1}(0)$, we thus seek for solutions to (1) satisfying

$$\lim_{x \rightarrow \pm\infty} (u(x), u'(x), u''(x), u'''(x)) = (z_{\pm}, 0, 0, 0).$$

We employ a variational method, minimizing

$$\mathcal{J}(u) := \int_{-\infty}^{+\infty} |u''|^2 + \beta |u'|^2 + F(u) dx,$$

in the class

$$\mathcal{E} := \{u \in W_{loc}^{2,2}(\mathbb{R}) : \lim_{x \rightarrow \pm\infty} u(x) = z_{\pm}\}.$$

When F is not too degenerate at $\pm\infty$, we prove existence of a minimizer in \mathcal{E} , which turns out to be a classical heteroclinic. The emphasis is on the multiwell case, where $F^{-1}(0)$ is discrete, but possibly contains more than two points.

Local:
**Instituto para a Investigação Interdisciplinar
da Universidade de Lisboa**
Av. Prof. Gama Pinto, 2
1649-003 Lisboa

