

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 11 de Abril (quinta-feira), às 13h30, na sala 6.2.33

Multiplicity of ground states for the scalar curvature equation without reciprocal symmetry

Francesca Dalbono
(Università degli Studi di Palermo)

Abstract:

We study the existence and multiplicity of radial ground states for the scalar curvature equation

$$\Delta u + K(|x|) u^{\frac{n+2}{n-2}} = 0, \quad x \in \mathbb{R}^n, \quad n \geq 3,$$

where $K : \mathbb{R}^+ \rightarrow \mathbb{R}^+$ is a positive C^1 bounded function,

$$0 < \underline{K} \leq K(r) \leq \overline{K} \quad \forall r > 0,$$

which has a unique critical point, corresponding to a minimum. Existence of an arbitrarily large number of fast decay solutions, i.e. solutions which decay at infinity like $|x|^{2-n}$, is ensured when the ratio $\overline{K}/\underline{K}$ is smaller than some computable values. Multiplicity results can be found in the literature for reciprocally symmetric weights. Our main purpose is to extend the studies to a non-reciprocal symmetric situation by adopting a dynamical approach and developing a constructive argument based on some elementary tools of phase plane analysis. Our proof is based on Fowler transformation and invariant manifold theory.

This is a joint work with Matteo Franca and Andrea Sfecci.

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