



Centro de Ciências Exatas e da Natureza
Departamento de Matemática
Secretaria de Pós-Graduação

Colóquio do DMat

On the existence of ground states for linearly coupled systems

José Carlos de Albuquerque

(DMat / UFPE)

Abstract:

In this talk we give a survey on recent results related to the existence of ground states for several classes of linearly coupled systems

$$Lu + V_1(x)u = f_1(x, u) + \lambda(x)v, \quad x \in \mathbb{R}^N,$$

$$Lv + V_2(x)v = f_2(x, v) + \lambda(x)u, \quad x \in \mathbb{R}^N,$$

where L denotes a local or nonlocal operator. These classes of systems impose many difficulties, for instance: the lack of compactness, the presence of linear coupling functions $\lambda(x)v$ and $\lambda(x)u$ in the right-hand side, the type of operator L if it is local or nonlocal, the behavior of the nonlinear terms, etc. Our purpose is to travel on some recent works, by discussing the difficulties and the method which has been used to overcome such difficulties. Naturally, new questions arise which motivate new works regarding existence and nonexistence of solutions.



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Av. Jornalista Aníbal Fernandes, sn, Cidade Universitária
CEP 50740-560, Recife, Pernambuco.
fone 81 2126-7650 www.ufpe.br/pgdmat