SEMINÁRIO DE EQUAÇÕES DIFERENCIAIS

DM-UFSCar & ICMC

A non-periodic and asymptotically linear indefinite variational problem in $\mathbb{R}^N$

J.C. Oliveira Júnior (Universidade Federal do Tocantins)

Abstract

A nonlinear Schrödinger equation which models a light beam propagating in a saturable medium may present a sign changing potential in the linear term and lead to a semilinear elliptic equation in $\mathbb{R}^N$ with a potential that has a negative part. This class of problems in which the potential is not strictly positive has not been deeply explored so far. Our goal is to tackle this problem and show the existence of a nontrivial solution for

$$-\Delta u + V(x)u = f(u) \ \text{ in } \ \mathbb{R}^N,$$

$N \geq 3$, with a continuous and non-periodic potential V which changes sign, with an asymptotic limit $V_\infty > 0$ at infinity and a function f asymptotically linear at infinity. The existence of a solution is established employing spectral theory, a classical linking theorem and interaction between the above problem and translated ground states solutions of the limit problem.

DATA: 05/04/2019

HORA: 16:00

LOCAL: Auditório do DM / UFSCar