Stationary Schrödinger equations in $\mathbb{R}^2$ with unbounded or vanishing potentials and involving concave nonlinearities

Francisco Siberio B. Albuquerque

In this talk, we study the existence and multiplicity of solutions for the following class of stationary nonlinear Schrödinger equations:

$$-\Delta u + V(|x|)u = Q(|x|)f(u) + \lambda g(x, u), \quad x \in \mathbb{R}^2,$$

where $\lambda$ is a nonnegative parameter, $V$ and $Q$ are unbounded or decaying radial potentials, the nonlinearity $f(s)$ may exhibit exponential growth and $g(x, s)$ is a concave term. The approach used here is based on a version of the Trudinger-Moser inequality, mountain-pass theorem and the Ekeland’s variational principle in a suitable weighted Sobolev space.

Joint work with Uberlandio B. Severo (Department of Mathematics, UFPB - Universidade Federal da Paraíba).

*Department of Mathematics, Universidade Estadual da Paraíba, email: fsiberio@cct.uepb.edu.br