

EXISTENCE OF SOLUTIONS FOR CRITICAL QUASILINEAR SCHRÖDINGER EQUATIONS

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In this talk we consider existence of nontrivial solutions for quasilinear Schrödinger equations where the nonlinear term is a powerlike function. More precisely, we deal with the elliptic problem

$$\begin{aligned} -\Delta u + V(x)u - \Delta(u^2)u &= \lambda q(x)u + \mu K(x)|u|^{p-2}u + |u|^{2^*-2}u + h(x), \quad x \in \mathbb{R}^N, \\ u &\in H^1(\mathbb{R}^N), \end{aligned} \tag{0.1}$$

where the parameter μ , λ are positive. The main difficulty arises from the fact that we consider nonlinear terms interacting with high eigenvalues for the linear problem. Under these conditions we consider a Local Linking Theorem in order to ensure existence of nontrivial solutions of the problem (0.1) using the fact that the parameter μ is large enough. Hence we restore some compactness results and the energy functional associated to (0.1) satisfies the geometry conditions for the Local Linking Theorem. Furthermore, we obtain a solution for the problem (0.1) which is nontrivial whenever $h = 0$.

Work jointly with E. D. Silva.