Analysis Seminar

A global branch approach to normalized solutions for Schrodinger equations

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Abstract. In this talk, we present a novel approach to study the existence, non-existence and multiplicity of prescribed mass positive solutions to a Schrodinger equation of the form

$$-\Delta u + \lambda u = g(u) \quad u \in H^1(\mathbb{R}^N) \ N \geq 1.$$

This approach permits to handle in a unified way nonlinearities $g(s)$ which are either mass subcritical, mass critical or mas supercritical. Among its main ingredients is the study of the asymptotic behaviours of the positive solutions as $\lambda \to 0^+$ or $\lambda \to +\infty$ and the existence of an unbounded continuum of solutions in $(0, +\infty) \times H^1(\mathbb{R}^N)$. This talk is based on joint work with Prof. Louis Jeanjean and Prof. Xuexiu Zhong.