

Nonlinear Schrödinger Equations on compact metric graphs

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Abstract

Within this talk we overview some recent results on stationary solutions to NonLinear Schrödinger Equations on compact metric graphs. We exploit two different variational approaches. Specific attention is devoted to highlight the dependence of the problem on both topological and metric properties of the graph. On the one hand, we focus on critical points of the energy functional under the mass constraint. In this setting, we discuss existence of solutions and minimality properties of functions that are constant on the whole graph. On the other hand, we consider critical points of the action functional. Within this framework, we address the construction of peaked solutions at large frequencies and the characterization of low action solutions on graphs with terminal edges.

This is joint work with Claudio Cacciapuoti (Università dell'Insubria) and Enrico Serra (Politecnico di Torino), and with Marco Ghimenti (Università di Pisa), Anna Maria Micheletti (Università di Pisa) and Angela Pistoia (Università La Sapienza Roma).