Oberseminar Nichtlineare Differentialgleichungen

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Perturbation theory for embedded eigenvalues of asymptotically periodic operators

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Abstract: In this talk I will explore the persistence of embedded eigenvalues of asymptotically periodic Schrödinger-type operators under perturbations on domains with only one unbounded direction. Embedded eigenvalues present unique challenges, as they lie within the continuous spectrum, making their stability under perturbations a nontrivial problem.

The aim of this talk is to first provide a general background on embedded eigenvalues and their perturbations as well as the central problem formulation for my previous work on this topic, outlining the motivation, key challenges and well-known results and examples, as well as some preliminaries on the theory needed to investigate problems of this kind.

Finally, I will present the results obtained in this work and outline the methods used. In particular, I show that in certain settings—when the unperturbed operator's embedded eigenvalue lies away from the thresholds of the continuous spectrum—the set of perturbations for which a simple embedded eigenvalue persists forms a smooth Banach manifold of finite, even codimension within the space of admissible perturbations.

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