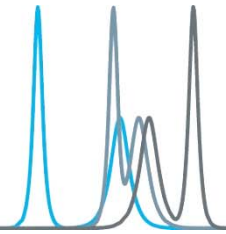

Lehrstuhl für Analysis und Modellierung

Lehrstuhl-Seminar
Sommersemester
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Dr. Giulio Romani

Martin-Luther-Universität Halle-Wittenberg

Bifurcations in Schrödinger "doubly" nonlinear eigenvalue problems and an application to a time-harmonic Maxwell's equation

21. Juli 2020 - 10:30
WebEx

Abstract: I will present some recent results about bifurcation of small solutions for a class of nonlinear Schrödinger equations, which are nonlinear also in the bifurcation parameter ("doubly nonlinear"). Such problems can be obtained by considering a suitable ansatz with a transverse electric polarisation in time-harmonic Maxwell's equations. In particular, we are interested in plasmonic solutions of Maxwell's problems which are localized along straight interface(s) between layers of different materials, where suitable transmission conditions have to be taken into account. In those configurations for which we are able to spot an isolated and simple eigenvalue for the linear problem, a branch of small solutions is obtained by means of a Lyapunov-Schmidt decomposition. Furthermore, an asymptotic expansion for such a branch of solutions is provided. In particular, PT-symmetric configurations of layers will be used to ensure that the bifurcating nonlinear eigenvalues remain real. The results have been obtained in collaboration with Tomás Dohnal (MLU Halle-Wittenberg).

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