

Title: **Bifurcation of Ordinary Differential Equations from Points of Fučík Spectrum**

Author: **Vendula Exnerová**

Department: **Department of Mathematical Analysis**

Supervisor: **doc. RNDr. Jana Stará, CSc.**, Department of Mathematical Analysis
MFF UK, Prague

Abstract: The main subject of the thesis is the Fučík spectrum of a system of two differential equations of the second order with mixed boundary conditions. In the first part of the thesis there are described Fučík spectra of problems of a differential equation with Dirichlet, mixed and Neumann boundary conditions. The other part deals with systems of two differential equations. It attends to basic properties of systems and their nontrivial solutions, to a possibility of a reduction of number of parameters and to a dependance of a problem with mixed boundary condition on one with Dirichlet boundary conditions. The thesis takes up the results of E. Massa and B. Ruff about the Dirichlet problem and improves some of their proofs. In the end the Fučík spectrum of a problem with mixed boundary conditions is described as the union of countably many continuously differentiable surfaces and there is proven that this spectrum is closed.