

The Fučík spectrum structure: known results, experiments and open problems

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We study the structure of the Fučík spectrum

$$\Sigma(L) = \{(\alpha, \beta) \in \mathbb{R}^2 : Lu = \alpha u^+ - \beta u^- \text{ has a nontrivial solution}\}$$

for linear differential operators L . We introduce the Fučík spectra in the case of non-selfadjoint ordinary differential operators of the second order which correspond to four-point boundary value problems. The complete analytical description of the non-trivial Fučík spectra provides us useful background to formulate new hypotheses.