

Shifted Hermite-Biehler functions. II. Applications

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joint work with Harald Woracek

The general result presented in the lecture by H. Woracek devoted to the order in location of pure imaginary zeros of functions from the class $\mathcal{T}(HB_{<\infty}^{sb})$ is applied to describe eigenvalues of the following boundary value problems: the original and generalized Regge problems, a problem describing small transversal vibrations of a damped string, a problem describing small transversal vibrations of a damped elastic compressed rod. These problems are generated by ordinary differential equations and boundary conditions depending on the spectral parameter. The order in location of pure imaginary eigenvalues can be used for solving the corresponding inverse problems, i.e. problems of recovering the coefficients of equations and the boundary conditions using the spectrum of the boundary value problem.

Another approach to the mentioned boundary value problems is connected with the theory of quadratic operator pencils.