Quadratic (weakly) hyperbolic matrix polynomials: Direct spectral problems

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joint work with T.Ya. Azizov, K.-H. Förster, and P. Jonas

Let L be a monic quadratic weakly hyperbolic or hyperbolic $n \times n$ matrix polynomial. We discuss the solutions of some direct spectral problems: The eigenvalues of a one-dimensional perturbation of L and the eigenvalues of a compression of L to a space of dimension $n-1$ interlace those of L. We explain the kind of interlacing. A key role in our proofs of these results is played by matrix valued Nevanlinna functions.

The lecture is based on joint work with Tomas Azizov, Karl-Heinz Förster, and Peter Jonas started in 2001, but just recently finished. In another lecture Tomas Azizov will discuss an inverse spectral problem.