On the Schur Transformation of Generalized Nevanlinna Functions

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joint work with D. Alpay and H. Langer

The classical Schur transformation at $z = 0$,

$$s(z) \longrightarrow s_1(z) = \frac{1}{z}\,\frac{s(z) - s(0)}{1 - s(0)^* s(z)},$$

maps a Schur function $s(z)$ (holomorphic on the open unit disk and bounded by 1 there) to a Schur function $s_1(z)$. It has been generalized to Schur functions $s(z)$ with finitely many negative squares which are holomorphic at $z = 0$ by C. Chamfy and others. Together with T. Azizov (Voronezh) and G. Wanjala (Mbarara) we have studied the effect of this transformation on the isometric realization of generalized Schur functions and related topics such as the basic interpolation problem, augmented Schur parameters, and factorization of a class of 2×2 matrix polynomials.

In this lecture we extend the Schur transform to Nevanlinna functions with finitely many negative squares which are holomorphic at a fixed point in the open upper half plane.