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Factorization of non-negative operator valued trigonometric polynomials in two variables

Abstract

Schur complements provide a convenient tool for proving the operator valued version of the classical (single variable) Fejér-Riesz problem. It also enables the factorization of multivariable trigonometric polynomials which are strictly positive. A result of Scheiderer implies that in two variables, nonnegative scalar valued trigonometric polynomials have sums of squares decompositions. Using a generalization of the notion of the Schur complement, we show how to extend this to operator valued trigonometric polynomials in two variables. We also indicate some other problems which may be tackled in a similar manner, including an operator version of Marshall's Positivstellensatz on the strip.

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Special Session: Multivariable operator theory. Organized by H. Woerdeman.