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Weyl functions of bounded quasi-selfadjoint operators and block operator Jacobi matrices

A bounded linear operator T in a separable Hilbert space H is called quasi-selfadjoint if $\ker(T - T^*) \neq \{0\}$ and N-quasi-selfadjoint if $N \supseteq \mathrm{ran}(T - T^*)$, where N is a subspace of H. An N-quasi-selfadjoint operator T is called N-simple if

$$\overline{\mathrm{span}}\{T^n N,\ n = 0, 1, \ldots\} = H.$$

We study the N-Weyl function $M(z) = P_N(T - zI_H)^{-1}|N$ of an N-quasi-selfadjoint operator and define its so-called "Schur parameters". The main result is that any N-quasi-selfadjoint and N-simple operator is unitarily equivalent to an operator given by a special block operator Jacobi matrix constructed by means of the Schur parameters of its N-Weyl function.

The talk is based on joint work with Lutz Klotz (Leipzig, Germany).