

## Talk 1

Analytic reproducing kernels, multiplication operators and factorization.

Many important spaces of interest to operator theorists and function theorists are Hilbert spaces of analytic functions on complex domains. Examples include the Hardy space of the disc, the Bergman space and the Dirichlet space. These spaces possess analytic reproducing kernels defined on the unit disc. In this talk, we will consider the problem of recreating the Hilbert space from knowledge of the reproducing kernel. We will gain insights as to when such spaces have a basis of polynomials as well as to when multiplication by the independent variable is a bounded operator. One of the main tools in this study is the so called reverse Cholesky algorithm and the resulting Wold-Zahusin decomposition.

## Talk 2

Analytic tridiagonal reproducing kernels

An analytic reproducing kernel is said to have finite band width if the matrix of coefficients of the kernel has finite band width. The most studied and best understood examples are the classical spaces. (i.e. the Hardy space and its friends.) The classical spaces all have diagonal matrices. In this talk, the techniques of the first talk are applied to kernels with band width  $j$ . We will see that such kernels generate Hilbert spaces of analytic functions whose natural domains are discs about the origin plus up to  $j$  additional points on the boundary. For the special case of tridiagonal kernels, a very interesting family of kernels will be explored using the techniques of the first talk. We provide an explicit description of the resulting space which allows for an immediate determination of the commutant of multiplication by the independent variable.