Model spaces and the compressed shift operator

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Abstract

Just as how understanding the multiplication operator M_z on L^2 is key to the study of self-adjoint operators, the same is true for the compressed shift operator S_u on a model space K_u, in the study of completely non-unitary (CNU) contractions.

The goal of this session is to introduce model spaces and the compressed shift, covering topics of interest from the book "Introduction to Model Spaces and their Operators" by Stephan Ramon Garcia, Javad Mashreghi, and William T. Ross. In the first half, I will discuss function theoretic aspects of the Hardy space $H^2(D)$, with the goal to introduce the model spaces Ku. In the second half, I will discuss the compressed shift operator Su, with the goal to define the H^∞-functional calculus for S_u (developed by Sz.-Nagy-Foiaş in the 1950s). Time permitting, I will also discuss the commutant lifting theorem, which is a key result in operator theory.