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Kelly Bickel* (kbickel13@math.gatech.edu) and **Greg Knese**. *Two-Variable Transfer Function Realizations and Agler Kernels*.

Every Schur function on the bidisk can be decomposed into a sum of positive kernels, called Agler kernels. These positive kernels induce important representation formulas for bounded holomorphic functions, called transfer function realizations (T.F.R.'s), in terms of Hilbert spaces contractions. Alger's proof of the existence of these kernel decompositions and T.F.R.'s was nonconstructive and their structure was quite mysterious for many years.

In previous work, the speaker and Greg Knese constructed Agler kernels for inner functions, examined the structure of such kernels, and obtained refined results for rational inner functions. In this talk, we will discuss extensions of these constructions and results to general two-variable Schur functions. We will also highlight new, related results about the structure of two-variable T.F.R.'s. This is joint work with Greg Knese. (Received September 16, 2013)