Department of Mathematics

University of Houston

Analysis Seminar

Thursday, September 22, 2016

11:00-12:00 – Room 646 PGH

Speaker: Constanze Liaw (Baylor University)

Title: Finite rank unitary perturbations

Abstract: The unitary perturbations of a given unitary operator by finite rank d operators can be parametrized by $d \times d$ unitary matrices; this generalizes the rank $d = 1$ setting, where the Clark family is parametrized by the scalars on the unit circle.
For finite rank perturbations we investigate the functional model of a related class of contractions, as well as a (unitary) Clark operator that realizes such a model representation for a particular contraction. We find a representation of the adjoint of the Clark operator, which features a matrix-valued Cauchy integral operator.
We express the matrix-valued characteristic functions of the model (for the class of contractions). Unlike in the rank one case, these characteristic functions do not seem to be related via a linear fractional transformation.
In the case of inner characteristic functions results suggest a generalization of the normalized Cauchy transform to the finite rank setting.
This presentation is based on joint work with Sergei Treil.