

DREXEL ANALYSIS SEMINAR

October 20, 2023

12-1 PM, Korman 245

Speaker: James Pascoe (Drexel)

Title: Matrix convex verbatim enumeration functions are graphical

Abstract: Matrix convexity is the “complete version” of classical convexity, and just as completely positive maps have rigid structure, so do matrix convex functions. We will begin with a historical overview, from the work of Kraus to the most general multivariate analog – generally speaking, matrix convex functions must be real analytic and moreover the Schur complement of an essentially unique operator pencil, which is obtained via a Gelfand-Naimark-Segal type construction on the power series coefficients. In the case where the noncommutative power series has 0-1 coefficients, the verbatim enumeration functions, we show that the coefficients arise from a graph. Important examples include the Schur complement (enumerating positive integers), Ando unitarization function (enumerating Dyck paths), the AMT perspective function (enumerating some kind of deformed Dyck paths) and others.