James Pascoe

Washington University in St. Louis

Monotonicity in several non-commuting variables

Abstract

Let $f : (a, b)\mathbb{R}$. The function f is said to be matrix monotone if $A \leq B$ implies $f(A) \leq f(B)$ for all pairs of like- sized self-adjoint matrices with spectrum in (a, b). Classically, Charles Loewner showed that a bounded Borel function is matrix monotone if and only if it is analytic and extends to be a self-map of the upper half plane. The theory of matrix montonicity has profound consequences for any general theory of matrix inequalities. For example, it might seem surprising that $X \leq Y$ does not imply that $X^2 \leq Y^2$, which is a consequence of Loewner's theorem. We will discuss commutative and noncommutative generalizations to several variables of Loewner's theorem

Talk time: 07/22/2016 2:30PM— 07/22/2016 2:50PM
Talk location: Crow 206

Special Session: Non-commutative inequalities. Organized by J.W. Helton and I. Klep.