Taylor spectrum approach to Brownian-type operators with quasinormal entry

Il Bong Jung

Kyungpook National University, Daegu, 41566 Korea
E-mail: ibjung@knu.ac.kr

In this talk we introduce operators that are represented by upper triangular 2×2 block matrices which have the $(2,2)$-entry X as a place holder for operators and satisfy some algebraic constraints. We call such operators "Brownian-type operators". These operators emerged from the study of Brownian isometries performed by Agler and Stankus via detailed analysis of the time shift operator of the modified Brownian motion process. If X is a qusinormal operator, the associated Brownian-type operator T is called "Brownian-type operator with qasinormal entry" [or, briefly we say "operator of class $\mathcal{Q}$"]. We characterize the subnormality of operators of class $\mathcal{Q}$ by using the Taylor spectrum technique. The Taylor spectrum approach turns out to be fruitful enough to allow us to characterize other classes of operators such as quasi-Brownian isometry, Brownian isometry, m-contraction, m-expansivity, and m-isometry. We characterize these operators of class $\mathcal{Q}$ by the Taylor spectrum approach and also discuss some related topics.

(This is a joint work with S. Chavan, Z. Jablonski, and J. Stochel.)