FINITE DYNAMICAL COMPLEXITY AND QUANTITATIVE STABLE RANK

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Time：Tue, Dec. 3, 10:00-11:00

Venue: 腾讯会议：896 500 94041, Meeting Password: 200433

Abstract: Finite dynamical complexity for dynamical systems, introduced by Guentner, Willett, and Yu in 2016, extends the geometric concept of finite decomposition complexity for metric spaces (developed by the first and third authors with Tessera) and builds upon the notion of dynamic asymptotic dimension for dynamical systems (introduced by same three authors). This framework captures the ability to iteratively decompose a dynamical system into smaller, more manageable components. Inspired by this idea, we introduce the concept of quantitative stable rank, a quantitative analogue of the classical stable rank, and use it to establish bounds on the classical stable rank of the C*-algebra associated with dynamical systems exhibiting finite dynamical complexity.