

POINTWISE ERGODIC THEOREM FOR UNIFORMLY BEHAVED SEQUENCES OF NATURAL NUMBERS

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The City University of New York-Graduate Center and Queens College

Time: Thursday, April 25, 2024, 15:50-16:50

Venue: Room 2001, East Main Guanghua Tower

Abstract: We will start with the renowned Birkhoff ergodic theorem, which asserts that in an ergodic measure-preserving dynamical system on a probability space, the time average of an L^1 -function over natural numbers matches the space average for almost all points. Additionally, if the dynamical system is uniquely ergodic on a compact metric space, this equivalence extends to every point for continuous functions. Subsequently, attention turns to our current investigation into the time averages of continuous functions along sequences of natural numbers, which holds implications for number theory. The concept of uniformly behaved sequences of natural numbers is introduced, accompanied by illustrative examples. Finally, a finding, jointly developed with my Ph.D. student Jessica Liu, is presented: in a minimal, uniquely ergodic, and \mathbf{a} -mean Lyapunov stable dynamical system on a compact metric space, the time average of a continuous function along a uniformly behaved sequence \mathbf{a} of natural numbers equals the space average for every point.