POINTWISE ERGODIC THEOREM FOR UNIFORMLY BEHAVED SEQUENCES OF NATURAL NUMBERS

Speaker: Professor Yunping Jiang

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 L1-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 **a**-mean Lyapunov stable dynamical system on a compact metric space, the time average of a continuous function along a uniformly behaved sequence **a** of natural numbers equals the space average for every point.

THE COEXISTENCE PHENOMENON IN DYNAMICAL SYSTEMS

Speaker: Professor Huyi Hu

Michigan State University

Time：Thursday, April 25, 2024, 16:50-17:50

Venue：Room 2001, East Main Guanghua Tower

Abstract： A volume preserving dynamical system exhibits coexistence phenomenon if it consists of two invariant sets of positive volume, the regular part and chaotic part, on which the Lyapunov exponents are all zero and all nonzero respectively. Further, the system is ergodic on the chaotic part. If the regular set is nowhere dense, then we say that the system exhibits essential coexistence phenomenon. In this talk we introduce some examples of systems exhibiting coexistence and essential coexistence phenomenon obtained from early eighties to the recent years.