A TEMPORAL CENTRAL LIMIT THEOREM FOR IRRATIONAL ROTATIONS

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Venue: Room 102, SCMS

Abstract：

In chaotic dynamical systems with positive entropy, ergodic sums often display probabilistic behaviour similar to sums of independent random variables, and satisfy the spatial central limit theorem (CLT). In contrast, for zero-entropy systems, the spatial CLT typically fails due to the absence of fast mixing properties.

Nevertheless, for certain zero-entropy systems, such as irrational rotations of bounded type, we can recover the central limit theorem by considering single orbit statistics, where we fix the initial point and randomise time, leading to a temporal version of the CLT.

In this talk, I will present ongoing joint work with Bromberg and Ulcigrai, where we use symbolic coding and new tools for non-homogeneous Markov chains to establish a temporal CLT for a broader class of observables over bounded-type irrational rotations.