复动力系统中的最小周期轨定理

李智强 (Stony Brook)

举杯邀明月，对影成三人。Ruelle zeta 函数是动力系统对黎曼的一份邀约，却因此串联起数论、动力系统和几何三大领域。黎曼 zeta 函数的重要性质借由动力系统显现，不仅能加深人们对动力性质的认识，更能解释动力系统和几何信息的深刻关联。最小周期轨定理（Prime Orbit Theorem）便是其中一例：它神似素数定理（Prime Number Theorem），形同素测地线定理（Prime Geodesic Theorem），影伴拉普拉斯和 Ruelle 算子，半个世纪以来热度不减。最小周期轨定理和素测地线定理缘何俘获众心？Ruelle zeta 函数又何以幻化万千？12 月 14 日下午 2 点李智强博士将为您浅释其中缘由，并讲述复动力系统中最小周期轨定理的最新研究进展。

PRIME ORBIT THEOREMS IN COMPLEX DYNAMICS AND BEYOND

Zhiqiang Li (Stony Brook)

Periodic orbits and geodesics play important roles in the study of dynamics and geometry, respectively. In resemblance to the classical Prime Number Theorem in number theory and its relation to the Riemann Hypothesis, it is a natural problem to investigate precise asymptotes for the number of (primitive) periodic orbits and (closed) geodesics, as well as the corresponding error terms. Such results, often known as Prime Orbit Theorems and Prime Geodesic Theorems, have been established in many dynamical and geometric contexts.

In this talk, we are going to give a brief overview on the history of such results in dynamics and geometry as well as their connections. We will focus on the recent discoveries of Prime Orbit Theorems in complex dynamics, a vibrant branch of dynamical systems, concentrating on the study of iterated rational maps (i.e., quotients of polynomials) on the Riemann sphere.