

藕舫论坛·数学与交叉应用系列讲座第 11 期

——特邀数学与统计学院 T.D. Leta 博士作报告

报告人：T.D. Leta（莱塔）

报告主题：Bifurcation Theory and Its Application

报告时间：2022 年 5 月 25 日 14:00-15:00

参会方式：线上 腾讯会议 ID：250-551-980

线下 邮件告知参会地址

摘 要： Recently, the phase space of a dynamical system has attracted the attention of the scientific community for decades. With many scientific achievements coming from the real world, the motivation to understand the underlying nature of a given dynamical system has led to a rich cooperation between the theoretical and the applied aspects of the subject. Such dynamical models may come in various sizes and shapes: they can be either finite dimensional or infinite dimensional. Of special interest are systems whose solutions undergo topological changes upon variations on their parameters. These events are known as bifurcations and are ubiquitous in every nonlinear system that depends on parameters. These phenomena are characterized by the re-arrangement of invariant objects - such as equilibria, periodic solutions and invariant manifolds - when one or more control parameters are perturbed beyond a critical threshold.

Today, the scope of bifurcation theory has broadened to make an impact on rapidly growing branches of dynamics such as slow-fast systems, piece-wise models, delay differential equations, Hamiltonian systems, stochastic systems, as well as across the pattern formation theory. This is of special interest to understand the nature of systems near bifurcations in many applications, such as in laser dynamics, optics, extinction/survival/synchronising thresholds in population models in ecology and developmental biology, fluid mechanics and celestial mechanics, electrochemical reactions, to name a few examples. In this talk we discuss advancements of bifurcation theory by taking few examples for the abovementioned real world problems.

报告人介绍： Temesgen Desta Leta received his PhD from Zhejiang Normal University in 2018. He had appointments as a teacher and researcher since 04/2019 in Nanjing University of Information Science and Technology. Currently, he is a teacher at college of Reading in NUIST. His research interest includes dynamical systems theories and its applications to areas of applied mathematics. He received funding from the project of National Natural Science Foundation of China and the project of Talented Young Scientists Program Ministry of Science and Technology, China.

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BIFURCATION THEORY AND ITS APPLICATION

主讲人



T.D. LETA (莱塔)

摘要： Recently, the phase space of a dynamical system has attracted the attention of the scientific community for decades. With many scientific achievements coming from the real world, the motivation to understand the underlying nature of a given dynamical system has led to a rich cooperation between the theoretical and the applied aspects of the subject. Such dynamical models may come in various sizes and shapes: they can be either finite dimensional or infinite dimensional. Of special interest are systems whose solutions undergo topological changes upon variations on their parameters. These events are known as bifurcations and are ubiquitous in every nonlinear system that depends on parameters. These phenomena are characterized by the re-arrangement of invariant objects - such as equilibria, periodic solutions and invariant manifolds when one or more control parameters are perturbed beyond a critical threshold. Today, the scope of bifurcation theory has broadened to make an impact on rapidly growing branches of dynamics such as slow-fast systems, piece-wise models, delay differential equations, Hamiltonian systems, stochastic systems, as well as across the pattern formation theory. This is of special interest to understand the nature of systems near bifurcations in many applications, such as in laser dynamics, optics, extinction/survival/synchronising thresholds in population models in ecology and developmental biology, fluid mechanics and celestial mechanics, electrochemical reactions, to name a few examples. In this talk we discuss advancements of bifurcation theory by taking few examples for the abovementioned real world problems.

个人简介：

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