第二十二届复杂系统与网络科学研究中心论坛

The Twenty-Second Workshop of Research Center for Complex Systems and Network Sciences

程

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东南大学数学系

主办：东南大学复杂系统与网络科学研究中心

东南大学数学系

第二十二届复杂系统与网络科学研究中心论坛
The Twenty-Second Workshop of Research Center for
Complex Systems and Network Sciences

时间：2016 年 12 月 7 日

地点：东南大学数学系第一报告厅（九龙湖校区图书馆 5 楼）

开幕式介绍： 曹进德 教授 （东南大学）

曹进德、卢剑权 (主持)

Some event-triggered schemes for multi-agent systems
Daniel W.C. Ho

香港城市大学数学系 16：00-17：00

Poincaré-Pontryagen 定理在 $\mathbb{R}^3$ 中的推广及其应用
李承治

北京大学数学科学学院 17：00-18：00

Inquiry:　Jianquan Lu 卢剑权 (jqluma@seu.edu.cn)；Jinde Cao 曹进德 (jdcao@seu.edu.cn)

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Some event-triggered schemes for multi-agent systems
Daniel W.C. Ho

香港城市大学数学系 16：00-17：00

Abstract

Cooperative behaviors in networks involving autonomous mobile agents have aroused great research interest from different research communities due to their wide applications in various fields including the engineering field, robotics, and parallel computation. One of the important problems of cooperative behaviors is consensus which aims to design effective algorithms for communication and control of agents so that all members agree upon the same final state.

Most of these works assume that either agents get continuous access to the states of their neighbors or the controllers update themselves continuously via current states of agents. In order to lower the cost, a sample-data approach was proposed. In general, sampled-data control is essentially time driven and needs to estimate a conservative sampling period or average sampling period. Recently, a new approach is developed based on event-triggered. It has provided an alternative mechanism where agents broadcast their states or update controller only when they need, which is unknown in advance. That is, only when the condition is triggered, the agents will then take the sample of information or controllers take the corresponding action respectively. Compared with traditional control methods, even-driven controller has the advantages of lowering cost and saving energy. In this talk, we shall discuss various types of event-triggered techniques over different kinds of network topologies.

About the speaker

Prof. Daniel W. C. Ho received BSc, MSc and PhD degrees in mathematics from the University of Salford (UK) in 1980, 1982 and 1986 respectively. From 1985 to 1988, he was a Research Fellow in Industrial Control Unit, University of Strathclyde (Glasgow, Scotland). In 1989, he joined the Department of Mathematics, City University of Hong Kong. Currently, he is the Chair Professor and Assistant Dean in Teaching Innovations of College of Science and Engineering.

Prof. Ho serves as Subject editor for Journal of the Franklin Institute , Associate Editor for five other international Control journals including IET Control Theory and its applications, and Asian Journal of Control. He is recipient of "The Best paper award" from the 8th Asian Control Conference. In 2012, he is honored to be the Chang Jiang Chair Professor, awarded by Ministry of Education, China. Recently, he is named as Highly Cited Researchers in Engineering by Thomson Reuters in 2014, 2015 and 2016. He will be elevated to IEEE Fellow from 2017.

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Abstract

利用阿贝尔积分的零点个数研究弱化希尔伯特第 16 问题的理论基础是 Poincaré-Pontryagen 定理。为了研究三维可积系统在扰动下出现周期解的问题，我们首先在一定条件下把 Poincaré-Pontryagen 定理在$\mathbb{R}^3$中推广，使得阿贝尔积分也得到相应推广。作为应用，我们研究一类三维 Volterra 系统在扰动下产生周期解的问题。

此工作是与马知恩教授和周义仓教授合作的，发表在 J. Differential Equations, 260（2016）, 2750-2762。

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