

学术报告会

时间：2013年5月17日(周五)13:00-14:30

地点：电院群楼3-100会议室

TIME DELAYED SYSTEMS (TDS) STABILITY, CONTROL and APPLICATIONS Overture to a 30-yr journey

Prof. Nejat Olgac

University of Connecticut, USA



Abstract:

TDS are infinite dimensional systems. As such, they offer mathematically very challenging stability and control problems, which kept many system specialists occupied in the past 6+ decades. The pillar of this talk is on UCONN's very recent umbrella paradigm called the 'Cluster Treatment of Characteristic Roots (CTCR)'. This paradigm starts with some earlier-unrecognized features of the LTI-Time Delay Systems, and proposes a unique resolution to the stability assessment of TDS via a substantially different perspective than the competing methodologies. It results in a paradoxical finding that states the stability of systems may be improved by artificially increasing the existing delays. Most critically it declares such stability pockets non-conservatively and exhaustively. This feature leads to new stabilizing control concepts which the speaker named "Delay Scheduling (DS)" and "Sign Inverting Control (SIC)".

Biography:

Nejat Olgac has been a professor with the Mechanical Engineering Department of the University of Connecticut since 1981. His research interests are in robust nonlinear controls, active vibration absorption, time-delayed systems, micromanipulation in bio-engineering. Dr. Olgac holds four patents, three on the Delayed Resonator active vibration suppression technique (1995-1996-1999) and a fourth one on anti-chatter concepts in simultaneous machining (2011). He is the director of Advanced Laboratory for Robotics, Automation and Manufacturing (ALARM) at UConn. Dr. Olgac was Visiting Professor at INRIA (Sophia Antipolis, France) 1988-89, SEW Eurodrive Fellow - Guest Professor at Technical Univ. of Munich, Germany in 1995-96 and Visiting Professor at Harvard University 2002-03). He was a member and the Chairman of the Executive Committee of the ASME Dynamic Systems and Control Division (2001-6). Prof. Olgac is a member of the Connecticut Academy of Science and Engineering (CASE), Fellow of ASME and Senior Member of IEEE.