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[EE-SEMINARS] Special EE Seminar on Wednesday, July 13 - Antonella Ferrara

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Mon, Jul 11, 2016 at 3:06 PM

**Harvard John A. Paulson School of
Engineering and Applied Sciences****Electrical Engineering Seminar Series**

ANTONELLA FERRARA
UNIVERSITY OF PAVIA, ITALY

“OPTIMIZATION BASED HIGHER ORDER SLIDING MODE CONTROL: THEORY AND APPLICATIONS”

Wednesday, July 13, 2016

1:30 p.m.

Maxwell Dworkin 221

In the past years, an extensive literature has been devoted to the developments of Sliding Mode Control theory. This kind of methodology offers a number of benefits, the major of which is its robustness versus a significant class of uncertainties and disturbances. Yet, it often presents a crucial drawback, the so-called chattering phenomenon, due to the high frequency switching of the control signal. Chattering may disrupt or damage actuators, thus limiting the actual applicability of this interesting control approach. Starting from the basic concepts, the aim of this lecture is to provide an overview of recent theoretical developments oriented to improve the performance of sliding mode controllers and to enlarge their applicability scope. In particular, Optimization Based Higher Order Sliding Mode Control algorithms will be presented in the talk. The combined use of Sliding Mode Control and MPC will be also briefly addressed. In order to confirm the practical applicability of the developed theory, some applications will be mentioned. They belong to different fields: micro-grids control, robotics, avionic systems, automotive control.

Speaker: Antonella Ferrara was born in Genova, Italy. She received the Laurea Degree magna cum laude in Electronic Engineering in 1987 and the Ph.D. in Computer Science and Electronics in 1992 from the University of Genova. She has been Full Professor of Automatic Control at the University of Pavia since January 2005. Her research mainly deals with sliding mode and nonlinear control with application to traffic, automotive control and robotics. She has authored/co-authored more than 300 papers, one third of which are journal papers. Prof. Ferrara was Associate Editor of the IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY and of the IEEE TRANSACTIONS ON AUTOMATIC CONTROL. Since January 2014, she has been Associate Editor of the IEEE Control Systems Magazine. She is senior member of the IEEE Control Systems Society, and, among others, member of the IEEE Technical Committee on Variable Structure and Sliding Mode Control, of the IEEE Technical Committee on Automotive Control, and of the IFAC Technical

Committee on Transportation Systems. Since July 2013 she has been Chair of the Women in Control Standing Committee of the Control Systems Society. She was appointed member of the Board of Governors of the IEEE Control Systems Society for 2012, and is elected member for the triennium 2016-2018. Since July 2015 she has been serving as a member of the EUCA (European Control Association) Council.

Host: Na Li

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