



# International Federation of Automatic Control

Invites you on  
**Thursday, 7 April 2022**  
**16.15 s.t.**

at the  
**Haus der Ingenieure**  
Eschenbachgasse 9, 1010 Wien  
1. Obergeschoß

**to the lecture**

**“Making the case for switched control in systems science”**

Speaker:

**Prof. Sarah Spurgeon OBE,**  
**FREng, FIEEE, FIET**  
IFAC Vice-President, Publications Board Chair

Please RSVP to:  
**IFAC SECRETARIAT**  
Schlossplatz 12, 2361 Laxenburg  
E-mail: [secretariat@ifac-control.org](mailto:secretariat@ifac-control.org)

## Abstract

### **“Making the case for switched control in systems science”**

by Sarah Spurgeon

Department of Electronic and Electrical Engineering, University College  
London, UK

Since the topic of sliding mode control was introduced to the international control community following early pioneering work in the former Soviet Union in the 1960's, the methodology has received a great deal of attention across a broad range of application domains. Fundamental to the approach is its total invariance to an important class of parameter variations and uncertainty. A further advantage is that the dynamic behaviour of the system may be directly tailored by the choice of a so-called switching function - essentially this switching function can be thought of as a measure of the desired performance.

This presentation will begin with a review of the basic properties and terminology of such discontinuous controllers. By appealing to highly conserved and robust controllers from biology, the case for discontinuous control as an underpinning element for robustness in both the control and observation of large scale and complex systems will be made. Results from current applications of interest including the biological domain will be used to demonstrate the significance of the approach.

The environment of the control scientist continues to change rapidly. Coupled with advances in communications, networking, sensing and computing, problems become ever more large scale. This is coupled with an increasing appetite to incorporate data and learning within these systems. The presentation will conclude with some comments on what switched control may have to contribute to this rapidly developing agenda.

## Program

16.15 s.t.

### **Introduction**

Dr. Dimitri Peaucelle (FR)  
IFAC VP Operations, Secretary

16.30

### **Making the case for switched control in systems science**

#### **Speaker:**

Prof. Sarah Spurgeon  
IFAC Vice-President,  
Publications Board Chair  
University College London

17.15

### **Diskussion/Q&A**

Moderation  
Dr. Dimitri Peaucelle