



**Ph.D. School in Electrical and Electronic  
Engineering and Computer Science**

**International Doctoral School on  
Advanced Topics in Electrical and Electronic  
Engineering and Informatics**

## **Tracking Model Predictive Control**

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13 May 2013, h 16.00  
Aula Seminari ex Elettronica (piano D)  
Università degli Studi di Pavia – Via Ferrata 5 - Pavia

### **Abstract:**

The main objective of tracking model predictive control is to steer the tracking error, that is the difference between the reference and the output, to zero while the constraints are satisfied.

In order to predict the expected evolution of the tracking error, some assumptions on the future values of the reference must be considered. Since the reference may differ from expected, the tracking problem is inherently uncertain.

Tracking predictive schemes are typically based on a two layer control structure in which provided the value of the reference, first a reachable trajectory is computed, and then a nominal MPC is designed to steer the system to this target. Under certain assumptions, closed-loop stability can be guaranteed if the initial state is inside the feasibility region of the MPC. However, if the value of the reference is changed, then there is no guarantee that feasibility and stability properties of the resulting control law hold. Specialized predictive controllers have been designed to deal with this problem. This talk will present recent results on MPC for tracking, which ensures recursive feasibility and asymptotic stability when the value of the reference is changed.

### **Biography**

Daniel Limon is associate professor of the University of Seville. His research interests are stabilizing design of nominal and robust predictive controllers, tracking predictive control and economic control. He is author or coauthor of more than 25 journal papers, 60 conference papers and 10 book chapters and he has been researcher in several research projects funded by the EU and the Spanish government. He has been a plenary speaker of 3rd IFAC conference on NMPC, Pavia 2008 and he is the conference chair of the 5th IFAC conference on NMPC.

**Organizer**

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