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## **Vortragsankündigung**

Seminar Regelungssysteme LV 0430 L 654

Montag, 07. Juni 2010, 16:00 Uhr

Vortragsort: EN 223

**Prof. Laurent Hardouin**  
**Université d'Angers, Angers, France**

“An overview on control theory for  $(\max, +)$  linear systems”

Many discrete event dynamic systems, such as transportation networks, communication networks, manufacturing assembly lines, are subject to synchronization and delay phenomena. Timed event graphs (TEGs) are a subclass of timed Petri nets and are suitable tools to model these systems. A timed event graph is a timed Petri net of which all places have exactly one upstream transition and one downstream transition. Its description can be transformed into a  $(\max, +)$  or a  $(\min, +)$  linear model and vice versa. This property has advantaged the emergence of a specific control theory for these systems.

The talk will propose a survey of different control strategies developed for twenty years. Among them we will discuss about optimal open loop control, and optimal feedback control in order to solve the model matching problem and the analogous of the disturbance decoupling problem. More recent results show that it is possible to get a state estimation by considering observer designed in an analogous manner to the one introduced by Luenberger for classical linear systems. To deal with uncertainties, it is possible to consider interval arithmetic, it is an alternative to stochastic point of view. We will show how this arithmetic can be used in  $(\max, +)$  algebra context, in order to compute robust controllers when the model parameters are assumed to evolve in a bounded context.