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PIMS / AMI Seminar Series

Tuesday, December 7, 2010
3:30 p.m.
CAB 657

"Optimal Control of Transport-Reaction Processes: Riccati Equation Approach"

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Abstract

The majority of the industrial process systems, such as transport reaction and fluid flow systems, are of distributed parameter nature characterized by significant spatial variations and nontrivial systems dynamics. The omnipresent theme of efficient, more utilizable and stringent performance requirements in controller synthesis for process systems is a challenging task that needs to exploit rapidly expanding computing power and increased availability of sensing, estimation and actuation. In this talk, I present optimal controller synthesis for an industrially relevant class of transport reaction processes described by hyperbolic and parabolic partial differential equations (PDEs). Two dominant models of transport-reaction systems describing both convective and diffusive type of transport are treated from the intrinsic dynamics point of view. The controller performance and evaluation of the approach are demonstrated by some examples through simulations studies that provide an insight into industrially relevant controller synthesis.

Refreshments will be served in CAB 649 at 3:00 p.m.