TA14
Control of Batch and Periodic Processes
Chair: Qin, S. Joe
Organizer: Qin, S. Joe

09:15 2150
A comparison of run-to-run control algorithms (I)
Campbell, W. Jarrett
Firth, Stacy K.
Toprac, Anthony J.
Edgar, Thomas F.
Yield Dynamics, Inc.
Yield Dynamics, Inc.
Yield Dynamics, Inc.
Univ. of Texas at Austin

09:35 2156
Stability analysis of double EWMA run-to-run control with metrology delay (I)
Good, Richard
Qin, S. Joe
The Univ. of Texas at Austin
The Univ. of Texas at Austin

09:55 2162
Synthesis of gain scheduling controllers for nonlinear batch processes (I)
Palanki, Srinivas
Kolavennu, Soumitri
Florida State Univ.
Honeywell Labs

10:15 2168
Adaptive run to run control for intermittent batch operations (I)
Qin, S. Joe
Scheid, Glen W.
Riley, Terrence J.
University of Texas at Austin
LSI Logic
Advanced Micro Devices

10:35 2174
Interplay between identification and optimization in run-to-run optimization schemes (I)
Srinivasan, B.
Bonvin, D.
EPFL

10:55 2180
In-situ process control for semiconductor manufacturing
Taylor, James H.
Whidden, Thomas K.
Xiaozhong, Zhao
Univ. of New Brunswick
FiberOptic Gateways Inc.
Dalhousie Univ.

TA15
H-infinity
Chair: Kim, Ki-Baek
Co-Chair: Ding, Steven X.

09:15 2186
Intervalwise receding horizon H-infinity tracking controls for linear continuous time-varying systems
Kim, Ki Baek
Kwon, Wook Hyun
California Inst. of Tech.
Seoul Natl. Univ.

09:35 2192
Singular H-infinity-control in terms of nonstandard J-spectral factorizations
Oara, Cristian
Univ. Polytechnica Bucharest
Robust H-infinity filter design for linear systems with state delay and parameter uncertainty
Cai, Yunze Shanghai Jiaotong Univ.
Xu, Xiaoming Shanghai Jiaotong Univ.
He, Xing Shanghai Jiaotong Univ.
Zhang, Weidong Shanghai Jiaotong Univ.

An H-infinity approach to fault detection for sampled-data systems
Zhang, P. Tsinghua Univ.
Ding, S. X. Univ. of Duisburg
Wang, G. Z. Tsinghua Univ.
Zhou, D. H. Tsinghua Univ.
Ding, E. L. Univ. of Applied Sci. at Gelsenkirchen

Low-order H-infinity controller design for discrete-time linear systems
Zhai, Guisheng Wakayama Univ.
Tamaoki, Kenzou Wakayama Univ.
Murao, Shinichi Wakayama Univ.

A generalized H-infinity control system design attenuating initial state uncertainties
Namerikawa, Toru Nagaoka Univ. of Tech.
Fujita, Masayuki Kanazawa Univ.
Smith, Roy S. Univ. of California at Santa Barbara
Uchida, Kenko Waseda Univ.

Robust controller and observer design for time-delay systems
Li, Xiaoqiu Purdue Univ.
DeCarlo, R. A. Purdue Univ.

On the stability of linear systems with uncertain delay
Kharitonov, Vladimir L. CINVESTAV-IPN
Niculescu, Silviu-Iulian Univ. Tech. Compiègne

Nonlocal stabilization via relay delay control gain adaptation
Fridman, L. Natl. Univ. of Mexico
Strygin, V. Chihuahua Inst. of Tech.
Polyakov, A. Voronezh State Univ.

A phase design method for delayed output feedback control of flexible mechanical systems
Liu, Zheng Univ. Southern California
Yang, Bingen Univ. of Southern California

Analytical formulas for quasi-H infinity control of linear systems with time delay
Zhang, Weidong None Shanghai Jiaotong Univ.
Wang, Hao Shanghai Jiaotong Univ.
Xu, Xiaoming Shanghai Jiaotong Univ.
Fault identification for a class of time-delay systems
Jiang, Bin 
Staroswiecki, Marcel 
Cocquempot, Vincent 
Univ. des Sciences et Tech. de Lille

Bifurcation and Chaos
Chair: Wang, Hua O. 
Co-Chair: Zhou, Kemin 
Embry-Riddle Univ.

A fluid dynamical approach to the control, synchronization and parameter identification of chaotic systems
Crispin, Yechiel 
Embry-Riddle Univ.

Nonlinear recursive chaos control
Harb, Ahmed 
Zaher, Ashraf 
Zohdy, Mohammed 
Jordan Univ. of Science and Tech. 
Oakland Univ. 
Oakland Univ.

On global synchronization of chaotic systems
Liao, Xiaoxin 
Chen, Guanrong 
Wang, Hua O. 
Huazhong Univ. of Science and Tech. 
City Univ. of Hong Kong 
Duke Univ.

Stabilization of chaotic discrete-time systems by periodic delayed feedback control
Yamamoto, Shigeru 
Ushio, Toshimitsu 
Osaka Univ. 
Osaka Univ.

Local robustness of Hopf bifurcation stabilization
Chen, Xiang 
Gu, Guoxiang 
Zhou, Kemin 
Univ. of Windsor 
Louisiana State Univ. 

Friction induced hunting limit cycles: an event mapping approach
Hensen, Ron H. A. 
vande Molengraft, Marinus J. G. 
Eindhoven Univ. of Tech. 
Eindhoven Univ. of Tech.

Command Shaping for Vibration Suppression
Chair: Meckl, Peter H. 
Co-Chair: Singhose, William E. 
Organizer: Meckl, Peter H. 
Purdue Univ. 
Georgia Inst. of Tech. 
Purdue Univ.

Comparison of filter types used for command preconditioning in vibration suppression applications (I)
Economou, D. 
Mavroidis, C. 
Antoniadis, I. 
National Tech. Univ. of Athens 
The State Univ. of New Jersey 
National Tech. Univ. of Athens

Discrete time-optimal command shapers and controls for multi-input multi-output systems (I)
Baumgart, Matthew D. 
Pao, Lucy Y. 
Univ. of Colorado at Boulder 
Univ. of Colorado at Boulder
Implementation alternatives for dual rate control systems with command shaping (I)
Ballesteros, Mauricio
Book, Wayne
Georgia Inst. of Tech.
Georgia Inst. of Tech.

Can a time invariant input shaping technique eliminate residual vibrations of LTV systems? (I)
Park, Juyi
Chang, Pyung Hun
Lee, Eunjong
Univ. of Texas at San Antonio
Korea Adv. Inst. of Science and Tech.
Univ. of Texas at San Antonio

Command shaping and closed-loop control interactions for a ship crane (I)
Agostini, Michael
Parker, Gordon G.
Groom, Kenneth
Schaub, Hanspeter
Robinett, Rush D.
Michigan Tech. Univ.
Michigan Tech. Univ.
Sandia Natl. Labs.
Sandia Natl. Labs.
Sandia Natl. Labs.

Design and control of optimal feedforward trajectories for scanners: STM example (I)
Devasia, S.
Perez, H.
Zou, Q.
Univ. of Washington
Univ. of Washington
Univ. of Washington

Neuromotor Control
Chair: Martin, Clyde F.
Co-Chair: Levine, William S.
Organizer: Dayawansa, Wijesuriya P.
Organizer: Schovanec, Lawrence
Texas Tech Univ.
Univ. of Maryland
Texas Tech Univ.
Texas Tech Univ.

Controllability of muscular hydrostat--tongues and tentacles (I)
Levine, William S.
Univ. of Maryland

Modelling and control of eye-movement with musculotendon dynamics (I)
Polpitiya, Ashoka D.
Ghosh, Bijoy K.
Washington Univ.
Washington Univ.

Effects of control strategies on stress development in skeletal structures (I)
Barhorst, Alan
Schovanec, Lawrence
Texas Tech Univ.
Texas Tech Univ.

On the stability of spike trains in networks of coupled oscillators (I)
Dayawansa, Wijesuriya P.
Martin, Clyde F.
Texas Tech Univ.
Texas Tech Univ.

Learning and adaptation in cortical control of arm movement (I)
Jiping, He
Arizona State Univ.

Robustly stable fixed point assignment problems for dynamical systems (I)
Ikegami, Toshiaki
Tokyo Denki Univ.
Ikegami Tsushinki Corp.
**TM03**

**Nonlinear Control I**

**Chair:** Tomizuka, Masayoshi  
**Univ. of California at Berkeley**

**Co-Chair:** Kiriakidis, Kiriakos  
**U.S. Naval Academy**

**01:30**  
**2336**

*H-infinity optimal filters for a class of nonlinear models*

Kiriakidis, Kiriakos  
**U.S. Naval Academy**

**01:50**  
**2340**

*Suppression of effects of nonlinearities in a class of nonlinear systems by disturbance observers*

Shahruz, S. M.  
**Berkeley Eng. Research Inst.**

Cloet, C.  
**Univ. of California at Berkeley**

Tomizuka, M.  
**Univ. of California at Berkeley**

**02:10**  
**2346**

*Robust nonlinear output feedback control for systems with unknown integrator gains*

Cheng, Teddy M.  
**Univ. of New South Wales**

Clements, David J.  
**Univ. of New South Wales**

Eaton, Ray  
**Univ. of New South Wales**

**02:30**  
**2348**

*Robust receding horizon control for piecewise linear systems based on constrained positively invariant sets*

Mukai, Masakazu  
**Kanazawa Univ.**

Azuma, Takehito  
**Kanazawa Univ.**

Fujita, Masayuki  
**Kanazawa Univ.**

**02:50**  
**2354**

*A simple PID regulator applicable for a class of factorable nonlinear plants*

Bányašz, Cs.  
**Hungarian Academy of Sciences**

Keviczky, L.  
**Hungarian Academy of Sciences**

**03:10**  
**2360**

*Reliable redundant control for nonlinear uncertain systems*

Yingwei, Zhang  
**Northeastern Univ.**

Fuli, Wang  
**Northeastern Univ.**

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**TM04**

**Sliding Mode Control I**

**Chair:** Orlov, Yuri V.  
**CICESE**

**Co-Chair:** Hsu, Liu  
**COPPE/Univ. of Rio de Janeiro**

**01:30**  
**2362**

*Sliding mode approach to PWM-controlled pneumatic systems (I)*

Barth, Eric J.  
**Vanderbilt Univ.**

Zhang, Jianlong  
**Vanderbilt Univ.**

Goldfarb, Michael  
**Vanderbilt Univ.**

**01:50**  
**2368**

*Approach angle-based switching function for sliding mode control design*

Buckholtz, Kenneth R.  
**Delphi Automotive Systems**

**02:10**  
**2374**

*Sliding mode method based vibration control of flexible arms*

Chen, Xinkai  
**Kinki Univ.**

Zhai, Guisheng  
**Wakayama Univ.**
## TM05
### Discrete Time Systems

**Chair:** Tarbouriech, Sophie  
**Co-Chair:** Richter, Hanz  
**LAAS-CNRS**  
**Oklahoma State Univ.**

#### 01:30 2392
**Stability analysis of discrete linear systems with quantized input and state measurements**

- Richter, Hanz  
- Misawa, Eduardo A.  
- NASA  
- Oklahoma State Univ.

#### 01:50 2398
**Robust stabilization and guaranteed cost control for discrete-time linear systems by static output feedback**

- García, Germain  
- Pradin, Bernard  
- Tarbouriech, Sophie  
- Zeng, Fanyou  
- LAAS-CNRS  
- LAAS-CNRS  
- LAAS-CNRS  
- INSA

#### 02:10 2404
**Robust stabilization of uncertain discrete time systems with state delay**

- Tsai, Jason Sheng-Hong  
- Lu, Chien-Yu  
- Su, Te-Jen  
- Jong, Gwo-Jia  
- Natl. Kaohsiung Univ. of Applied Sci.  
- Natl. Kaohsiung Univ. of Applied Sci.

#### 02:30 2406
**Stabilization of linear systems with limited information - multiple input case**

- Kao, C. Y.  
- Venkatesh, S. R.  
- MIT  
- Boston Univ.

#### 02:50 2412
**A stabilizing low-order output feedback receding horizon control for linear discrete time-invariant systems**

- Lee, Kwan Ho  
- Lee, Joon Hwa  
- Kwon, Wook Hyun  
- Seoul Natl. Univ.  
- Univ. of Seoul  
- Seoul Natl. Univ.

#### 03:10 2418
**Generalized (C,A,B)-pairs for linear periodic discrete-time systems**

- Otsuka, Naohisa  
- Tokyo Denki Univ.

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### TM06
### Control of Networks and the Web

**Chair:** Kahne, Stephen  
**Co-Chair:** Hollot, Christopher V.  
**Embry-Riddle Aeronautical Univ.**  
**Univ. of Massachusetts at Amherst**
Quality of service control for wireless systems: minimum power and minimum energy solutions
Huang, Minyi McGill Univ.
Malhame, Roland P. Ecole Polytechnique de Montreal
Caines, Peter E. McGill Univ.

Dynamic analysis of congested TCP networks (I)
Chait, Yossi Univ. of Massachusetts at Amherst
Holot, C. V. Univ. of Massachusetts at Amherst
Misra, Vishal Columbia Univ.
Han, Huai zhong Univ. of Massachusetts at Amherst
Halevi, Yoram Technion - I.I.T.

Dynamic modeling of internet traffic for intrusion detection
Jonckheere, E. Univ. of Southern California
Shah, K. Univ. of Southern California
Bohacek, S. Univ. of Southern California

Bifurcation analysis of TCP-RED dynamics
Ranjan, Priya Univ. of Maryland at College Park
Abed, Eyyad H. Univ. of Maryland at College Park

Flow control based on Dahlin control algorithm in ATM networks
Wei, Shen Shanghai Jiao Tong Univ.
Lisheng, Hu Shanghai Jiao Tong Univ.
Huhe, Shao Shanghai Jiao Tong Univ.

A new persistent contention-based real-time ethernet MAC protocol
Shen, Gang Shanghai Jiao Tong Univ.
Xu, Xiaoming Shanghai Jiao Tong Univ.
He, Xing Shanghai Jiao Tong Univ.
Zhao, Xia Shanghai Jiao Tong Univ.
Li, Xiaomeng Shanghai Jiao Tong Univ.
Geng, Tao Shanghai Jiao Tong Univ.

Model updating by output-only modal identification on civil structures (I)
De Stefano, Alessandro Politecnico Di Torino
Ceravolo, Rosario Politecnico Di Torino
Sabia, Donato Politecnico Di Torino

Modeling MR-dampers: the ridgenet estimation approach (I)
Jin, Gang Univ. of Notre Dame
Sain, Michael K. Univ. of Notre Dame
Spencer, Jr., Billie F. Univ. of Notre Dame
Structural control with dissipative damping devices (I)
Johnson, E. A.  
Erkus, B.  
Univ. of Southern California

Stiffness-mass ratios method for baseline determination and damage assessment of a benchmark structure (I)
Rodriguez, Ramses  
Barroso, Luciana R.  
Texas A&M Univ.

Control of torsionally asymmetric structures (I)
Gavin, Henri  
Alhan, Cenk  
Duke Univ.

Performance study of LOG, MCV, and risk-sensitive control methods for satellite structure control (I)
Won, Chang-Hee  
Gunaratne, Kodikara Thanuja  
Univ. of North Dakota

Experimental comparative evaluation of compliant control schemes for an anthropomorphic personal robot
Zollo, Loredana  
Siciliano, Bruno  
Laschi, Cecilia  
Tei, Giancarlo  
Dario, Paolo  
Scuola Superiore Sant' Anna  
Univ. di Napoli Federico II  
Scuola Superiore Sant' Anna  
Scuola Superiore Sant' Anna  
Scuola Superiore Sant' Anna

Attitude control of legged robot emu on ramp with unknown slope
Kinugasa, Tetsuya  
Osuka, Koichi  
Tsuyama Natl. College of Tech.  
Kyoto Univ.

Control and simulation of a 3D one-legged robot
Geng, Tao  
Li, Xiaoming  
Xu, Xiaoming  
Shanghai Jiaotong Univ.

Ballistic flip of a planar one-legged robot in simulation
Geng, Tao  
Li, Xiaoming  
Shen, Gang  
Xu, Xiaoming  
Shanghai Jiaotong Univ.

Minimax design of robust controllers for flexible systems
Singh, Tarunraj  
State Univ. of New York at Buffalo

Switched feedback control for first-order symmetric affine systems via time-state control form
Iwatani, Yasushi  
Ishikawa, Masato  
Hara, Shinji  
Tokyo Inst. of Tech.  
The Univ. of Tokyo  
The Univ. of Tokyo
Advances in Vehicle Dynamics Control Technology

Chair: Rajamani, Rajesh
Co-Chair: Liu, Sharon
Organizer: Buckland, Julia
Organizer: Liu, Sharon

01:30 2522
A robust controller design for drive by wire hydraulic power steering system (I)
Acarman, Tankut
Redmill, Keith A.
Özgüner, Ümit

01:50 2528
Experimental validation of a robust steering assist controller on a driving simulator (I)
Chen, Liang-kuang
Ulsoy, A. Galip

02:10 2534
H-infinity vehicle control using nondimensional perturbation measures (I)
Brennan, S.
Alleyne, A.

02:30 2540
The development of tilt-controlled narrow ground vehicles (I)
Gohl, J.
Rajamani, R.
Alexander, L.
Starr, P.

02:50 2546
Speed control experiments for commercial heavy vehicles with coordinated friction and engine compression brakes (I)
Druzhinina, M.
Stefanopoulou, A. G.

03:10 2552
A probabilistic approach to residual processing for vehicle fault detection (I)
Schwall, Matthew L.
Gerdes, J. Christian