



INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

**SECOND ANNOUNCEMENT,  
CALL FOR PARTICIPATION and  
PRELIMINARY PROGRAM**

**NOLCOS 2007**

The South African Council for Automation and Computation (SACAC)  
is proud to announce, on behalf of the  
International Federation of Automatic Control (IFAC), the

**7<sup>TH</sup> IFAC SYMPOSIUM  
ON  
NONLINEAR CONTROL SYSTEMS**

**Pretoria, South Africa, 22-24 August, 2007**

**<http://www.nolcos2007.org.za>**



**PRETORIA**



**KRUGER PARK**



**CAPE TOWN**

# CONTENTS

Contents .....	1
NOLCOS 2007 .....	2
Symposium Dates .....	2
Scope .....	2
Topics .....	3
International Program Committee .....	4
National Organising Committee .....	5
Contact details .....	5
Technical Sponsors .....	6
Sponsorship and Exhibitions .....	6
Symposium Venue .....	7
Provisional Program .....	8
Timetable .....	8
Papers .....	13
Registration .....	52
Confirmation .....	53
Symposium Fees .....	53
Payment Instruction .....	53
Cancellation .....	54
Registration Desk / Symposium Office .....	54
Travel Desk .....	54
Lunch .....	54
Social Events .....	54
Airport transfers .....	54
Hotel transfers .....	55
Technical Tours .....	55
Tourism .....	57
Pretoria .....	57
South Africa .....	57
Security .....	60
Hotel Accommodation .....	62
Day Tours .....	64
Pre and Post Tours .....	68
Terms and Conditions .....	76
IFAC Copyright .....	76

# NOLCOS 2007

## SYMPOSIUM DATES

Symposium date: 21 - 24 August 2007  
Deadline for early registration: 22 June 2007  
Deadline for hotel and tour booking: 22 July 2007

## SCOPE

The IFAC NOLCOS symposium is a continuing series of symposia that were previously held in Capri (I) 1988, Bordeaux (F) 1992, Lake Tahoe (USA) 1995, Enschede (NL) 1998, Saint-Petersburg (RUS) 2001, and Stuttgart (DE) 2004.

Nonlinear control systems have gained importance in many industrial areas and research has undergone significant developments recently. There are significant challenges in various fields of nonlinear control. NOLCOS 2007 will address these challenges with its focus on latest developments in theory and application of nonlinear control systems as well as related areas of research and engineering.

Acknowledged as the major international gathering of leading experts in industry and academia in the field of nonlinear control, NOLCOS aims at strengthening contacts between academia and industry to build up new networks and cultivate existing relations. High-level speakers will present the global spectrum of nonlinear control systems, state-of-the-art applications and developing directions.

NOLCOS 2007 is also meant as a forum for young scientists from all over the world. They will be given the opportunity to introduce their research ambitions and scientific work to an audience of international experts.

## TOPICS

- **Modelling and identification of nonlinear systems (K. Schlacher)**

nonlinear modelling and control of mechanical, electrical and process systems, smart structures, aerospace and marine applications, computer algebra based methods and tools, numerical methods, bilinear systems, system structure identification, experiment design, parameter estimation

- **Nonlinear systems optimal and predictive control (L. Magni)**

optimal control, necessary conditions, time optimal control, feasibility and stability issues, robustness, computational efficiency, performance issues, disturbance attenuation, NMPC applications

- **Mathematical theory, stability and stabilization of nonlinear systems (W. Kang)**

Stability, i/o stability, absolute stability, input to state stability (ISS), small gain theorems, dissipativity, passivity, stabilization, Lyapunov methods, dynamical systems techniques, bifurcation and chaos, fundamental limitation of control

- **Nonlinear systems complexity and networking (S. Celikovsky)**

Computational complexity, computer network systems, computer network management, complex network, sensor network, river network, network routing, chaos control, anti-control and synchronization,

- **Nonlinear systems observation and observers (H. Shim)**

Observability and observer design, filter design, state estimation and applications, adaptive observers, adaptive filters, observer and filter design by observer error linearization, Lyapunov stability methods, I/O stability methods, applications of observer design, observer based fault detection,

- **Nonlinear systems feedback design methods (E. Aranda-Bricaire)**

Algebraic methods, linear algebraic methods, geometric methods, backstepping, variable structure control and sliding mode, H $\infty$  control, system inversion

- **Nonlinear systems feedback design problems (A. Astolfi)**

Feedback linearization, output tracking and regulation, model matching, disturbance rejection, decoupling, design problems by output/measurement feedback, trajectory tracking, robustness issues, servo

- **Nonlinear systems feedback design advances (ZP Jiang)**

robust and adaptive control, optimal control, control of sampled data systems, discrete event and hybrid systems, quantized feedback and feedback with communication constraints, switching, invariance, stochastic control

- **Nonlinear process control and application (N. Kazantis)**

Batch processing, chemical process, mining, mineral and metal, model based control, optimization and scheduling, process and control monitoring, Process Control Applications

- **Application and implementation of nonlinear systems and control (E. Boje)**

Components and instruments, mechatronic systems, robotics, manufacturing, power systems, automotive systems, marine systems, aerospace, transportation systems, biological and biomedical systems.

# INTERNATIONAL PROGRAM COMMITTEE

IPC Chair ([ipc@nolcos2007.org.za](mailto:ipc@nolcos2007.org.za))

IPC Co-Chair

IFAC Representative

TC 2.3 Non-Linear Control Systems

TC 2.1 Control Design

TC 2.4 Optimal Control

TC 6.2 Chemical Process Control

X. Xia (ZA)

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Torkel Glad (SE)

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T. Basar (US)

E. Boje (ZA)

S. Celikovsky (CZ)

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A. Kugi (DE)

A.B. Kurzhanski (RU)

F. Lamnabhi-Lagarrigue (FR)

W. Lin (US)

D. Liberzon (US)

A. Loria (FR)

L. Magni (IT)

L. Marconi (IT)

R. Marino (IT)

C. H. Moog (FR)

D. Nesic (AU)

H. Nijmeijer (NL)

M. Peterson (ZA)

L. Praly (FR)

A. Rantzer (SE)

W. Respondek (FR)

J. Rudolph (DE)

A.J. van der Schaft (NL)

K. Schlacher (AT)

R. Sepulchre (BE)

H. Shim (SK)

S. Spurgeon (UK)

Y. Z. Sun (CN)

Z. D. Sun (IE)

A. Teel (US)

## NATIONAL ORGANISING COMMITTEE

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NOC Chair ([noc@nolcos2007.org.za](mailto:noc@nolcos2007.org.za))

F. Camisani-Calzolari (ZA)

E. Boje (ZA)

J. McKenzie (ZA)

K. Brooks (ZA)

G. Metzner (ZA)

L. Coetzee (ZA)

K. Oosthuizen (ZA)

I. Craig (ZA)

H. Scholten (ZA)

H. Crous-Beckett (ZA)

X. Xia (ZA)

J. Enslin (ZA)

J. Zhang (ZA)

## CONTACT DETAILS

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Any queries can be directed to:

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## TECHNICAL SPONSORS

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The following are the technical sponsors of the event:

- South African Council for Automation and Computation (South African NMO for IFAC)
- IFAC TC 2.3 Non-Linear Control Systems
- IFAC TC 2.1 Control Design
- IFAC TC 2.4 Optimal Control
- IFAC TC 6.2 Chemical Process Control
- IEEE Control Systems Society - Technical Committee on Nonlinear Systems & Controls

## SPONSORSHIP AND EXHIBITIONS

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Sponsorship and exhibition opportunities are available. Please contact the conference organizers for further information regarding this matter at [noc@nolcos2007.org.za](mailto:noc@nolcos2007.org.za)

## SYMPOSIUM VENUE

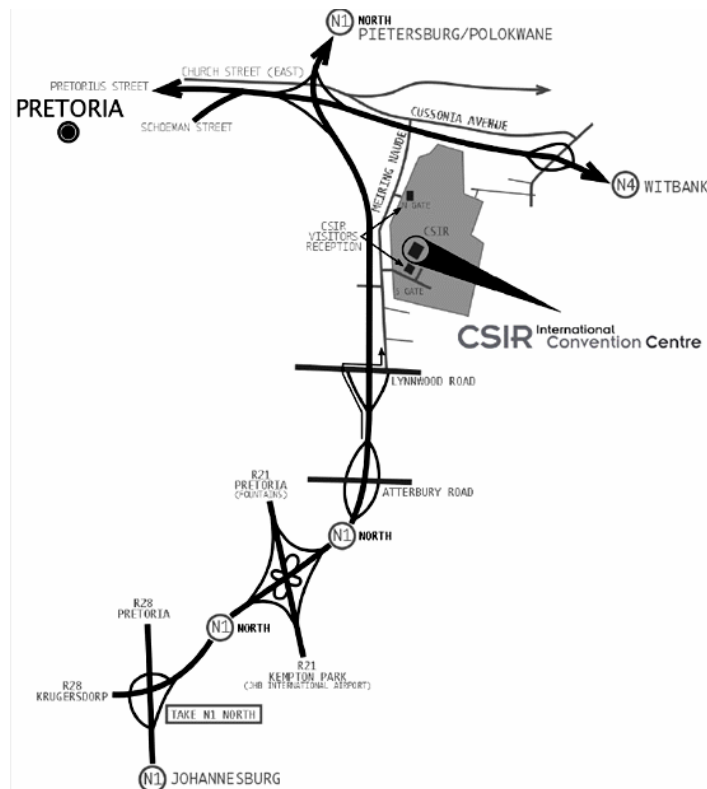
**CSIR International Convention Centre**  
**Meiring Naude Road**  
**Brummeria**  
**Pretoria**  
**South Africa**

More information about the CSIR International Convention Centre can be found at:  
<http://www.csiricc.co.za/index.html>

### Directions:

Take the Lynnwood Road turnoff  
Turn right over the highway, if coming from the South and left if coming from the North.  
Turn left at the first robot into Meiring Naude Road  
Cross over one robot (Kings Highway)  
Turn right into the first entrance, which is the CSIR south gate  
Keep left and follow the signs to the CSIR International Convention Centre  
Please note that it is not necessary to stop at the visitors reception area.

### Map:



# PROVISIONAL PROGRAM

## TIMETABLE

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The provisional symposium program is listed starting on the next page with papers in chronological order. Please note that the program is subject to change.

Technical Tours 09:00 -16:00

13:00-16:00

Registration

16:20-16:50

**Opening**

Prof. CWI Pistorius, Principal and Vice Chancellor, University of Pretoria

16:50-17:50

**Plenary 1**

**The Pebble Bed Modular Reactor and the usage of systems engineering to establish new standards for the nuclear revival**

Willie Theron, Pebble Bed Modular Reactor Ltd, South Africa

17:50-19:30

Cocktail Reception

Wednesday, 22 August 2007

8:30-17:10	Registration				
9:00-10:00	<p align="center"><b>Plenary 2</b>  <b>A unifying point of view on output feedback designs</b>          Laurent Praly, Ecole des Mines de Paris, France</p>				
10:10-10:40	<p align="center"><b>Semi-Plenary 1</b>  <b>Nonlinear control of PDEs: Are feedback linearization and geometric methods applicable?</b>          Miroslav Krstic, University of California, San Diego, USA</p>		<p align="center"><b>Semi-Plenary 2</b>  <b>Control by (state-modulated) interconnection of port Hamiltonian systems</b>          Arjan van der Schaft, University of Groningen, The Netherlands</p>		
10:40-11:10	Coffee				
11:10-13:10	<p align="center"><b>S1</b>  <b>ATF-NMPC</b>  <b>Advances in theoretical foundations of NMPC</b></p>	<p align="center"><b>S5</b>  <b>NCS</b>  <b>New complex systems</b></p>	<p align="center"><b>S10</b>  <b>NMST</b>  <b>Nonlinear mathematical systems theory</b></p>	<p align="center"><b>S15</b>  <b>PDE-I</b>  <b>Boundary control of nonlinear PDEs I</b></p>	<p align="center"><b>S19</b>  <b>NMI</b>  <b>Nonlinear modeling and identification</b></p>
13:10-14:10	Lunch				
14:10-14:40	<p align="center"><b>Semi Plenary 3</b>  <b>Controllability of Switched Systems</b>          Daizhan Cheng, Institute of Systems Science, Chinese Academy of Sciences, China</p>		<p align="center"><b>Semi-Plenary 4</b>  <b>Nonlinear output regulation and cross-terms compensation</b>          Lorenzo Marconi          University of Bologna, Italy</p>		
14:40-16:40	<p align="center"><b>S2</b>  <b>ACT-NMPC</b>  <b>Advances in computational techniques of NMPC</b></p>	<p align="center"><b>S6</b>  <b>NSCN</b>  <b>Nonlinear system complexity and networking</b></p>	<p align="center"><b>S11</b>  <b>MANS</b>  <b>Mathematical analysis of nonlinear systems</b></p>	<p align="center"><b>S16</b>  <b>PDE-II</b>  <b>Boundary control of nonlinear PDEs II</b></p>	<p align="center"><b>S20</b>  <b>MBFDA</b>  <b>Model based feedback design and applications</b></p>
16:40-17:10	Coffee				

Thursday, 23 August 2007

8:30-17:10	Registration				
9:00-10:00	<b>Plenary 3</b> <b>Probing biological cell networks using mathematical models</b> Claire J. Tomlin, UC Berkeley, USA				
10:10-10:40	<b>Semi-Plenary 5</b> <b>Analysis of the HIV dynamics</b> Claude Moog, IRCCyN CNRS, France		<b>Semi-Plenary 6</b> <b>Adding robustness to nominal output feedback controllers for nonlinear systems: A nonlinear version of disturbance observer</b> Hyungbo Shim, Seoul National University, Korea		
10:40-11:10	Coffee				
11:10-13:10	<b>S3</b> <b>NA-NMPC</b> Novel applications of NMPC	<b>S7</b> <b>ONS</b> Observation of nonlinear systems	<b>S12</b> <b>NASS</b> New approaches to stability and stabilization	<b>S17</b> <b>TNS</b> Tracking of nonlinear systems	<b>S21</b> <b>BBS</b> Biological and biomedical systems
13:10-14:10	Lunch				TC Meeting
14:10-14:40	<b>Semi-Plenary 7</b> <b>Networked control systems: An emulation approach to controller design</b> Dragan Nesic, The University of Melbourne, Australia		<b>Semi-Plenary 8</b> <b>Model reduction by moments' matching</b> Alessandro Astolfi Imperial College London, UK		
14:40-16:40	<b>S4</b> <b>MPCA</b> Model Predictive Control with applications	<b>S8</b> <b>RENS</b> Robust estimation of nonlinear systems	<b>S13</b> <b>SSSNI</b> Stability and stabilization of systems with nonlinearities in the input	<b>S18</b> <b>AANS</b> Algebraic approach to nonlinear systems	<b>S22</b> <b>NECBS</b> Nonlinear estimation and control of biochemical systems
16:40-17:10	Coffee				
19:00	Banquet				

Friday, 24 August 2007

8:30-15:40	Registration				
9:00-9:30	SP9		SP10		
9:40-10:40	Poster 1		Poster 2		
10:40-11:10	Coffee				
11:10-13:10	<p><b>S25</b> <b>NCIA</b> <b>Nonlinear control in industrial applications</b></p>	<p><b>S9</b> <b>RONs</b> <b>Robust observers of nonlinear systems</b></p>	<p><b>S14</b> <b>NSS</b> <b>Nonlinear system stabilization</b></p>	<p><b>S24</b> <b>NCPED</b> <b>Nonlinear control in power and electrical drives</b></p>	<p><b>S23</b> <b>LANS</b> <b>Lab applications of nonlinear systems</b></p>
13:10-14:10	Lunch				
14:10-15:10	<p><b>Plenary 4</b> <b>Taking advantage of homogeneity: A general framework for output feedback control of nonlinear systems</b> Wei Lin, Case Western Reserve University, USA</p>				
15:10-15:40	Closing Ceremony				

# PAPERS

## Plenary 1

### P01

21/08/2007

#### THE PEBBLE BED MODULAR REACTOR AND THE USAGE OF SYSTEMS ENGINEERING TO ESTABLISH NEW STANDARDS FOR THE NUCLEAR REVIVAL

04:50:00 PM to  
05:50:00 PM

Willie Theron (PBMR Pty Ltd, South Africa)  
Dieter Matzner (PBMR Pty Ltd, South Africa)  
Louwrence Erasmus (PBMR Pty Ltd, South Africa)

## Plenary 2

### P02

22/08/2007

#### A UNIFYING POINT OF VIEW ON OUTPUT FEEDBACK DESIGNS

09:00:00 AM to  
10:00:00 AM

Vincent Andrieu (Imperial College, United Kingdom)  
Laurent Praly (Ecole des Mines de Paris, France)

## Semi-Plenary 1

### SP01

22/08/2007

#### NONLINEAR CONTROL OF PDES: ARE FEEDBACK LINEARIZATION AND GEOMETRIC METHODS APPLICABLE?

10:10:00 AM to  
11:40:00 AM

Miroslav Krstic (University of California, San Diego, United States)  
Rafael Vazquez (Universidad de Sevilla, Spain)

## Semi-Plenary 2

### SP02

22/08/2007

#### CONTROL BY (STATE-MODULATED) INTERCONNECTION OF PORT-HAMILTONIAN SYSTEMS

10:10:00 AM to  
11:40:00 AM

Romeo Ortega (LSS Supelec, France)  
Arjan van der Schaft (University of Groningen, The Netherlands)  
Fernando Castanos (LSS Supelec, France)  
Alessandro Astolfi (Imperial College, United Kingdom)

# Advances in theoretical foundations of NMPC

**ATF-NMPC**

**S01**

**Invited Session**

Organized by Mircea Lazar, Eindhoven University of Technology, The Netherlands; Daniel Limon, Universidad de Sevilla, Spain; Davide Raimondo, Università di Pavia, Italy

22/08/2007

11:10:00 AM to  
11:30:00 AM

## **TUBE-BASED ROBUST NONLINEAR MODEL PREDICTIVE CONTROL**

David Q. Mayne (Imperial College London, United Kingdom)  
Eric C. Kerrigan (Imperial College London, United Kingdom)

22/08/2007

11:30:00 AM to  
11:50:00 AM

## **REGIONAL INPUT-TO-STATE STABILITY OF MIN-MAX MODEL PREDICTIVE CONTROL**

Davide Martino Raimondo (Università degli Studi di Pavia, Italy)  
Daniel Limon (Universidad de Sevilla, Spain)  
Mircea Lazar (Eindhoven University of Technology, The Netherlands)  
Lalo Magni (Università degli Studi di Pavia, Italy)  
Eduardo Fernandez Camacho (Universidad de Sevilla, Spain)

22/08/2007

11:50:00 AM to  
12:10:00 PM

## **MODEL PREDICTIVE CONTROL OF CONTINUOUS TIME NONLINEAR DIFFERENTIAL ALGEBRAIC SYSTEMS**

Johan Sjöberg (Linköpings University, Sweden)  
Rolf Findeisen (University of Stuttgart, Germany)  
Frank Allgöwer (University of Stuttgart, Germany)

22/08/2007

12:10:00 PM to  
12:30:00 PM

## **A DECENTRALIZED MPC ALGORITHM FOR NONLINEAR SYSTEMS**

Davide Martino Raimondo (Università di Pavia, Italy)  
Lalo Magni (Università di Pavia, Italy)  
Riccardo Scattolini (Politecnico di Milano, Italy)

22/08/2007

12:30:00 PM to  
12:50:00 PM

## **MODEL PREDICTIVE CONTROL FOR NONLINEAR TIME-DELAY SYSTEMS**

Tobias Raff (Institute for Systems Theory and Automatic Control, Germany)  
Carsten Angrick (Institute for Systems Theory and Automatic Control, Germany)  
Rolf Findeisen (Institute for Systems Theory and Automatic Control, Germany)  
Jung-Su Kim (Institute for Systems Theory and Automatic Control, Germany)  
Frank Allgöwer (Institute for Systems Theory and Automatic Control, Germany)

# New complex systems

**NCS**

**S05**

**Regular Session**

22/08/2007

11:10:00 AM to  
11:30:00 AM

## **QUANTITATIVE CONVERGENCE ANALYSIS OF MULTI-AGENT SYSTEMS**

S. Emre Tuna (University of Liege, Belgium)  
Rodolphe Sepulchre (University of Liege, Belgium)

22/08/2007

11:30:00 AM to  
11:50:00 AM

## **ENTROPY OF CURVES FOR NONLINEAR SYSTEMS CLASSIFICATION**

Aldo Balestrino (University of Pisa, Italy)  
Andrea Caiti (University of Pisa, Italy)  
Emanuele Crisotomi (University of Pisa, Italy)

22/08/2007

11:50:00 AM to  
12:10:00 PM

## **A MODEL FOR THE DYNAMICAL PROCESS OF CLUSTER FORMATION**

Dirk Aeyels (Ghent University, Belgium)  
Filip De Smet (Ghent University, Belgium)

22/08/2007

12:10:00 PM to  
12:30:00 PM

## **SWITCHED UNCERTAIN LINEAR SYSTEMS CONTROL BY ROBUST H<sub>∞</sub> SMC SYNTHESIS**

Jie Lian (Noretheastern University of Shenyang, China)  
Georgi Marko Dimirovski (Dogus University of Istanbul, Turkey)  
Jun Zhao (Australian National University of Canberra, Australia)

22/08/2007

12:30:00 PM to  
12:50:00 PM

## **DATA BASED QUANTIFICATION OF SYSTEM NONLINEARITY**

Shoukat Choudhury (Bangladesh University of Engineering and Technology, Bangladesh)  
Sirish Shah (University of Alberta, Canada)

# Nonlinear mathematical systems theory

**NMST**

**S10**

**Regular Session**

22/08/2007  
11:10:00 AM to  
11:30:00 AM

## COMPUTING THE SETTLING TIME FOR NONLINEAR STEP RESPONSES

Torkel Glad (Linkoping University, Sweden)

22/08/2007  
11:30:00 AM to  
11:50:00 AM

## A TRAJECTORY BASED APPROACH FOR ROBUST STABILITY PROPERTIES OF INFINITE-DIMENSIONAL SYSTEMS

Ying Tan (The University of Melbourne, Australia)  
Dragan Nesic (The University of Melbourne, Australia)  
Andrew Teel (University of California, Santa Barbara, United States)

22/08/2007  
11:50:00 AM to  
12:10:00 PM

## REDUCED DYNAMIC INVERSION FOR PLANAR AND SPATIAL VEHICLES

Alessandro Saccon (Università di Padova, Italy)  
John Hauser (University of Colorado, Boulder, United States)  
Ruggero Frezza (Università di Padova, Italy)

22/08/2007  
12:10:00 PM to  
12:30:00 PM

## THE DRIVEN ROLLING TORUS

John Hauser (University of Colorado, Boulder, United States)  
Alessandro Saccon (Univeristy of Padova, Italy)

22/08/2007  
12:30:00 PM to  
12:50:00 PM

## ENSEMBLE CONTROL ON LIE GROUPS

Jr-Shin Li (Washington University, United States)  
Navin Khaneja (Harvard University, United States)

22/08/2007  
12:50:00 PM to  
01:10:00 PM

## HOMOGENEOUS EIGENVALUE ANALYSIS FOR COMPLEX HOMOGENEOUS SYSTEMS

Nami Nakamura (Nara Institute of Science and Technology, Japan)  
Hisakazu Nakamura (Nara Institute of Science and Technology, Japan)  
Yuh Yamashita (Hokkaido University, Japan)  
Hirokazu Nishitani (Nara Institute of Science and Technology, Japan)

# Boundary control of nonlinear PDEs I

**PDE-I**

**S15**

**Invited Session**

Organized by Miroslav Krstic, University of California, San Diego, USA; Baozhu Guo, University of the Witwatersrand, South Africa

22/08/2007

## **ON UNIFORM STABILIZATION OF A SEMILINEAR WAVE EQUATION WITH VARIABLE COEFFICIENTS UNDER THE NONLINEAR BOUNDARY FEEDBACK**

11:10:00 AM to  
11:30:00 AM

Zhi-Chao Shao (University of the Witwatersrand, South Africa)  
Bao-Zhu Guo (University of the Witwatersrand, South Africa)

22/08/2007

## **ON THE BOUNDARY CONTROL OF KIRCHHOFF'S NONLINEAR STRING**

11:30:00 AM to  
11:50:00 AM

Omer Morgul (Bilkent University, Turkey)  
Shahram Shahruz (Berkeley Engineering Research Institute, United States)

22/08/2007

## **TRACKING CONTROL FOR A DIFFUSION-CONVECTION-REACTION SYSTEM: COMBINING FLATNESS AND BACKSTEPPING**

11:50:00 AM to  
12:10:00 PM

Thomas Meurer (Vienna University of Technology, Austria)  
Andreas Kugi (Vienna University of Technology, Austria)

22/08/2007

## **BOUNDARY CONTROL LAWS FOR PARABOLIC PDES WITH VOLTERRA NONLINEARITIES---PART I: DESIGN**

12:10:00 PM to  
12:30:00 PM

Rafael Vazquez (Universidad de Sevilla, Spain)  
Miroslav Krstic (University of California, San Diego, United States)

22/08/2007

## **BOUNDARY CONTROL LAWS FOR PARABOLIC PDES WITH VOLTERRA NONLINEARITIES---PART III: ANALYSIS**

12:30:00 PM to  
12:50:00 PM

Rafael Vazquez (Universidad de Sevilla, Spain)  
Miroslav Krstic (University of California, San Diego, United States)

# Nonlinear modeling and identification

**NMI**

**S19**

**Regular Session**

22/08/2007

## **IDENTIFICATION OF THE INERTIA MATRIX OF A ROTATING BODY BASED ON ERRORS-IN-VARIABLES MODELS**

11:10:00 AM to  
11:30:00 AM

Byung-Eul Jun (Agency for Defense Development, Republic of Korea)  
Dennis Bernstein (University of Michigan, Ann Arbor, United States)  
Harris McClamroch (University of Michigan, Ann Arbor, United States)

22/08/2007

## **USING MANIFOLD LEARNING FOR NONLINEAR SYSTEM IDENTIFICATION**

11:30:00 AM to  
11:50:00 AM

Henrik Ohlsson (Linköping University, Sweden)  
Jacob Roll (Linköping University, Sweden)  
Lennart Ljung (Linköping University, Sweden)  
Torkel Glad (Linköping University, Sweden)

22/08/2007

## **MODEL REDUCTION OF NONLINEAR DIFFERENTIAL-ALGEBRAIC EQUATIONS**

11:50:00 AM to  
12:10:00 PM

Johan Sjöberg (Linköping University, Sweden)  
Torkel Glad (Linköping University, Sweden)  
Kenji Fujimoto (Nagoya University, Japan)

22/08/2007

## **PORT-BASED FINITE ELEMENT MODEL OF A FLEXIBLE LINK**

12:10:00 PM to  
12:30:00 PM

Alessandro Macchelli (University of Bologna, Italy)  
Stefano Stramigioli (University of Twente, The Netherlands)  
Claudio Melchiorri (University of Bologna, Italy)

22/08/2007

## **APPROXIMATION OF FAST SPECIES IN KINETIC NETWORKS USING NONNEGATIVE POLYNOMIALS**

12:30:00 PM to  
12:50:00 PM

Klaas Martijn Nauta (Technische Universiteit Eindhoven, The Netherlands)  
Siep Weiland (Technische Universiteit Eindhoven, The Netherlands)  
Ton Backx (Technische Universiteit Eindhoven, The Netherlands)

22/08/2007

## **AN IDENTIFIABLE CONTROL ORIENTED DYNAMIC FRICTION MODEL**

12:50:00 PM to  
01:10:00 PM

Luis Alvarez-Icaza (Universidad Nacional Autónoma de México, Mexico)  
René Jiménez (Universidad Nacional Autónoma de México, Mexico)

## Semi-Plenary 3

**SP03**

22/08/2007

02:10:00 PM to  
02:40:00 PM

**CONTROLLABILITY OF SWITCHED SYSTEMS**

Daizhan Cheng (Institute of Systems Science, China)

## Semi-Plenary 4

**SP04**

22/08/2007

02:10:00 PM to  
02:40:00 PM

**NONLINEAR OUTPUT REGULATION AND CROSS-TERMS COMPENSATION**

Lorenzo Marconi (University of Bologna, Italy)

# Advances in computational techniques of NMPC

**ACT-NMPC**

**S02**

**Invited Session**

Organized by Mircea Lazar, Eindhoven University of Technology, The Netherlands; Daniel Limon, Universidad de Sevilla, Spain; Davide Raimondo, Universita di Pavia, Italy

22/08/2007

## **A PRACTICAL APPROACH TO PREDICTIVE CONTROL FOR NONLINEAR PROCESSES**

02:50:00 PM to  
03:10:00 PM

Agustinho Plucenio (Federal University of Santa Catarina, Brazil)  
Daniel Pagano (Federal University of Santa Catarina, Brazil)  
Augusto Bruciapaglia (Federal University of Santa Catarina, Brazil)  
Julio E. Normey-Rico (Federal University of Santa Catarina, Brazil)

22/08/2007

## **A STABILIZING NONLINEAR PREDICTIVE CONTROL STRATEGY**

03:10:00 PM to  
03:30:00 PM

Smaranda Cristea (University of Valladolid, Spain)  
Cesar de Prada (University of Valladolid, Spain)

22/08/2007

## **INPUT TO STATE STABILISING NONLINEAR MODEL PREDICTIVE CONTROL BASED ON QP**

03:30:00 PM to  
03:50:00 PM

Jose Mare (The University of Newcastle, Australia)  
Mircea Lazar (Eindhoven University of Technology, The Netherlands)  
Jose De Dona (The University of Newcastle, Australia)

22/08/2007

## **ADAPTIVE ROBUST MPC: AN EYE TOWARDS COMPUTATIONAL SIMPLICITY**

03:50:00 PM to  
04:10:00 PM

Darryl Dehaan (Praxair Research Centre, Canada)  
Veronica Adetola (Queen's University, Canada)  
Martin Guay (Queen's University, Canada)

22/08/2007

## **AN ONLINE ACTIVE SET STRATEGY FOR FAST ADJOINT BASED NONLINEAR MODEL PREDICTIVE CONTROL**

04:10:00 PM to  
04:30:00 PM

Leonard Wirsching (University of Heidelberg, Germany)  
Hans Joachim Ferreau (K.U. Leuven, Belgium)  
Hans Georg Bock (University of Heidelberg, Germany)  
Moritz Diehl (K.U. Leuven, Belgium)

# Nonlinear system complexity and networking

**NSCN**

**S06**

**Regular Session**

22/08/2007

## **ROBUST STRUCTURAL SYNCHRONIZATION IN DYNAMICAL COMPLEX NETWORKS**

02:50:00 PM to  
03:10:00 PM

Sergej Celikovskiy (Academy of Sciences of the Czech Republic, Czech Republic)  
Volodymyr Lynnyk (Czech Technical University, Czech Republic)  
Guanrong Chen (City University of Hong Kong, China)

22/08/2007

## **GRAZING ANALYSIS FOR SYNCHRONIZATION OF CHAOTIC HYBRID SYSTEM**

03:10:00 PM to  
03:30:00 PM

Djamila Benmerzouk (Tlemcen University, France)  
Jean-Pierre Barbot (Tlemcen University, France)

22/08/2007

## **PERFORMANCE CONTROL OF AGGREGATE QOS NETWORKING PROCESSES**

03:30:00 PM to  
03:50:00 PM

Alexandru Murgu (British Telecom, United Kingdom)

22/08/2007

## **A NON-EQUILIBRIUM ANALYSIS AND CONTROL FRAMEWORK FOR COMMUNICATION NETWORKS**

03:50:00 PM to  
04:10:00 PM

Tansu Alpcan (Deutsche Telekom Laboratories, Germany)  
Paul Wang (University of Illinois at Urbana-Champaign, United States)  
Prashant G. Mehta (University of Illinois at Urbana-Champaign, United States)  
Tamer Basar (University of Illinois at Urbana-Champaign, United States)

22/08/2007

## **A LYAPUNOV ISS SMALL-GAIN THEOREM FOR STRONGLY CONNECTED NETWORKS**

04:10:00 PM to  
04:30:00 PM

Sergey N. Dashkovskiy (Universität Bremen, Germany)  
Björn S. Rüffer (Universität Bremen, Germany)  
Fabian R. Wirth (Universität Bremen, Germany)

# Mathematical analysis of nonlinear systems

**MANS**

**S11**

**Regular Session**

22/08/2007

## **IMPROVING CONVERGENCE OF PERTURBATION-BASED EXTREMUM SEEKING METHODS FOR A CLASS OF DIFFERENTIALLY FLAT SYSTEMS**

02:50:00 PM to  
03:10:00 PM

Moncef Chioua (Ecole Polytechnique de Montreal, Canada)  
Bala Srinivasan (Ecole Polytechnique de Montreal, Canada)  
Michel Perrier (Ecole Polytechnique de Montreal, Canada)  
Martin Guay (Queen's University, Canada)

22/08/2007

## **GROWTH RATE OF SWITCHED HOMOGENEOUS SYSTEM**

03:10:00 PM to  
03:30:00 PM

S. Emre Tuna (University of Liege, Belgium)

22/08/2007

## **ABOUT THE OBSERVABILITY OF NONLINEAR SWITCHING SYSTEMS**

03:30:00 PM to  
03:50:00 PM

Rudy Kajdan (Laboratoire de Vision et Robotique, France)  
Didier Aubry (Laboratoire de Vision et Robotique, France)  
Frédéric Kratz (Laboratoire de Vision et Robotique, France)

22/08/2007

## **A BASIC CONVERGENCE RESULT FOR PARTICLE FILTERING**

03:50:00 PM to  
04:10:00 PM

Xiao-Li Hu (Chinese Academy of Sciences, China)  
Thomas B. Schön (Linköpings Universitet, Sweden)  
Lennart Ljung (Linköpings Universitet, Sweden)

22/08/2007

## **CLASSIFICATION AND CONTROL FOR DRIFTLESS SYSTEM IN VIEW OF PARAMETER ERROR IN COORDINATE TRANSFORMATION**

04:10:00 PM to  
04:30:00 PM

Tadasuke Matsumoto (Tokyo Institute of Technology, Japan)  
Shigeki Nakaura (Tokyo Institute of Technology, Japan)  
Mitsuji Sampei (Tokyo Institute of Technology, Japan)

22/08/2007

## **CONSERVATION LAWS FOR INVARIANT FUNCTIONALS CONTAINING COMPOSITIONS**

04:30:00 PM to  
04:50:00 PM

Gastao S. F. Frederico (University of Cabo Verde, Cape Verde)  
Delfim F. M. Torres (University of Aveiro, Portugal)

# Boundary control of nonlinear PDEs II

**PDE-II**

**S16**

**Invited Session**

Organized by Miroslav Krstic, University of California, San Diego, USA; Baozhu Guo, University of the Witwatersrand, South Africa

22/08/2007

## **MOTION PLANNING FOR THE HEAT EQUATION WITH RADIATION BOUNDARY CONDITIONS BASED ON FINITE DIFFERENCE SEMI-DISCRETIZATIONS**

02:50:00 PM to  
03:10:00 PM

Tilman Utz (Vienna University of Technology, Austria)  
Thomas Meurer (Vienna University of Technology, Austria)  
Andreas Kugi (Vienna University of Technology, Austria)

22/08/2007

## **BOUNDARY CONTROL OF SYSTEMS OF CONSERVATION LAWS: LYAPUNOV STABILITY WITH INTEGRAL**

03:10:00 PM to  
03:30:00 PM

Valérie Dos Santos (Université de Lyon, France)  
Georges Bastin (Université Catholique de Louvain - Belgique, Belgium)  
Jean-Michel Coron (Université Paris-Sud, France)  
Brigitte d'Andréa-Novel (Ecole des Mines de Paris, France)

22/08/2007

## **MODEL BASED PIPELINE MONITORING WITH LEAK DETECTION**

03:30:00 PM to  
03:50:00 PM

Espen Hauge (Norwegian University of Science and Technology, Norway)  
Ole Morten Aamo (Norwegian University of Science and Technology, Norway)  
John-Morten Godhavn (Statoil, Norway)

22/08/2007

## **BACKSTEPPING BOUNDARY CONTROL OF MAGNETOHYDRODYNAMIC CHANNEL FLOW**

03:50:00 PM to  
04:10:00 PM

Rafael Vazquez (Universidad de Sevilla, Spain)  
Eugenio Schuster (Lehigh University, United States)  
Miroslav Krstic (University of California, San Diego, United States)

22/08/2007

## **BOUNDARY CONTROL LAWS FOR PARABOLIC PDES WITH VOLTERRA NONLINEARITIES---PART II: EXAMPLES**

04:10:00 PM to  
04:30:00 PM

Rafael Vazquez (Universidad de Sevilla, Spain)  
Miroslav Krstic (University of California, San Diego, United States)

# Model based feedback design and applications

**MBFDA**

**S20**

**Regular Session**

22/08/2007

## **MODEL REDUCTION OF NONLINEAR SYSTEMS: A GREY-BOX MODELING APPROACH**

02:50:00 PM to  
03:10:00 PM

Leyla Ozkan (IPCOS, The Netherlands)  
Reinout Romijn (Aachen University, Germany)  
Siep Weiland (Technical University of Eindhoven, The Netherlands)  
Wolfgang Marquardt (Aachen University, Germany)  
Jobert Ludlage (IPCOS, The Netherlands)

22/08/2007

## **A STATE FEEDBACK CONTROL METHODOLOGY FOR NONLINEAR SYSTEMS WITH TIME/STATE DEPENDENT INPUT DELAY**

03:10:00 PM to  
03:30:00 PM

Gildas Besancon (INPG-GIPSAIab, France)  
Didier Georges (INPG-GIPSAIab, France)  
Zohra Benayache (INPG-GIPSAIab, France)

22/08/2007

## **COMPUTING FEASIBLE TRAJECTORIES FOR CONTROL-CONSTRAINED SYSTEMS: THE PVTOL EXAMPLE**

03:30:00 PM to  
03:50:00 PM

Giuseppe Notarstefano (Università del Salento, Italy)  
John Hauser (University of Colorado, Boulder, United States)  
Ruggero Frezza (University of Padova, Italy)

22/08/2007

## **REDUCTION OF AMPLITUDE DEPENDENT GAIN VARIATIONS IN CONTROL OF NON-LINEAR WIENER TYPE SYSTEMS**

03:50:00 PM to  
04:10:00 PM

Torbjorn Wigren (Uppsala University, Sweden)  
Linda Brus (Uppsala University, Sweden)

22/08/2007

## **ADAPTIVE CONTROL REDESIGN FOR NONLINEAR SAMPLED-DATA SYSTEMS**

04:10:00 PM to  
04:30:00 PM

Laurent Burlion (DGA/LRBA, France)  
Tarek Ahmed-Ali (ENSIETA, France)  
Romain Postoyan (L2S - CNRS, France)  
Françoise Lamnabhi-Lagarrigue (L2S - CNRS, France)

22/08/2007

## **OUTPUT FEEDBACK REGULATION OF A FLEXIBLE JOINT MANIPULATOR**

04:30:00 PM to  
04:50:00 PM

Miguel Rios-Bolivar (Universidad de Los Andes, Venezuela)  
Alirio Navas (Universidad de Los Andes, Venezuela)

## Plenary 3

**P03**

23/08/2007  
09:00:00 AM to  
10:00:00 AM

### **PROBING BIOLOGICAL CELL NETWORKS USING MATHEMATICAL MODELS**

Robin Raffard (Stanford University, United States)  
Keith Amonlirdvima (Stanford University, United States)  
Jeffrey Axelrod (Stanford University, United States)  
Claire Tomlin (Stanford/UC Berkeley, United States)

## Semi-Plenary 5

**SP05**

23/08/2007  
10:10:00 AM to  
11:40:00 AM

### **ANALYSIS OF THE HIV DYNAMICS**

Claude Moog (IRCCyN CNRS, France)  
Djomangan Adama Ouattara (IRCCyN, France)  
Marie-José Mhawej (IRCCyN, France)

## Semi-Plenary 6

**SP06**

23/08/2007  
  
10:10:00 AM to  
11:40:00 AM

### **ANALYSIS AND SYNTHESIS OF DISTURBANCE OBSERVER AS A TOOL FOR NONLINEAR ROBUST CONTROL**

Juhoon Back (Seoul National University, Republic of Korea)  
Hyungbo Shim (Seoul National University, Republic of Korea)

# Novel applications of NMPC

**NA-NMPC**

**S03**

**Invited Session**

Organized by Mircea Lazar, Eindhoven University of Technology, The Netherlands; Daniel Limon, Universidad de Sevilla, Spain; Davide Raimondo, Università di Pavia, Italy

23/08/2007

## **ASSESSMENT OF NONLINEAR PREDICTIVE CONTROL TECHNIQUES FOR DC-DC CONVERTERS**

11:10:00 AM to  
11:30:00 AM

A.G. Beccuti (ETH Zurich, Switzerland)  
M. Lazar (Eindhoven University of Technology, The Netherlands)  
W.P.M.H Heemels (Eindhoven University of Technology, The Netherlands)  
G. Papafotiou (ETH Zurich, Switzerland)  
M. Morari (ETH Zurich, Switzerland)

23/08/2007

## **PREDICTIVE CONTROL WITH ROBUST DEAD-TIME COMPENSATION: APPLICATION TO DRUG DOSING DURING ANESTHESIA**

11:30:00 AM to  
11:50:00 AM

Bismark Torrico (Federal University of Santa Catarina, Brazil)  
Robin De Keyser (University of Ghent, Belgium)  
Clara Ionescu (University of Ghent, Belgium)  
Julio E. Normey-Rico (Federal University of Santa Catarina, Brazil)

23/08/2007

## **MIXED INTEGER PREDICTIVE CONTROL OF A BUCK BOOST CONVERTER**

11:50:00 AM to  
12:10:00 PM

Daniel Sarabia (University of Valladolid, Spain)  
Martín J. Pomar (Federal University of Santa Catarina, Brazil)  
Julio E. Normey-Rico (Federal University of Santa Catarina, Brazil)  
César de Prada (University of Valladolid, Spain)

23/08/2007

## **APPLICATION OF A SMITH PREDICTOR BASED NONLINEAR PREDICTIVE CONTROLLER TO A SOLAR POWER PLANT**

12:10:00 PM to  
12:30:00 PM

Manuel Gálvez-Carrillo (Université Libre de Bruxelles, Belgium)  
Robin De Keyser (Ghent University, Belgium)  
Clara Ionescu (Ghent University, Belgium)

23/08/2007

## **FAST NMPC OF A DC-DC CONVERTER: AN EXACT NEWTON REAL-TIME ITERATION APPROACH**

12:30:00 PM to  
12:50:00 PM

Julian Bonilla (K.U. Leuven, Belgium)  
Robin De Keyser (Ghent University, Belgium)  
Moritz Diehl (K.U. Leuven, Belgium)  
Jairo Espinosa (Universidad Nacional De Colombia, Colombia)

# Observation of nonlinear systems

**ONS**

**S07**

**Regular Session**

23/08/2007

11:10:00 AM to  
11:30:00 AM

## **DISCUSSIONS ON OBSERVABILITY AND INVERTIBILITY**

Wei Kang (Naval Postgraduate School, United States)  
Jean-Pierre Barbot (ENSEA, France)

23/08/2007

11:30:00 AM to  
11:50:00 AM

## **SINGLE OUTPUT DEPENDENT QUADRATIC OBSERVABILITY NORMAL FORM**

Zheng Gang (INRIA, France)  
Boutat Driss (ENSI, France)  
Barbot Jean-Pierre (ENSEA, France)

23/08/2007

11:50:00 AM to  
12:10:00 PM

## **OBSERVER DESIGN VIA ABSOLUTE STABILITY FOR A CLASS OF NONLINEAR DESCRIPTOR SYSTEMS**

Tobias Raff (Institute for Systems Theory and Automatic Control, Germany)  
Frank Allgöwer (Institute for Systems Theory and Automatic Control, Germany)

23/08/2007

12:10:00 PM to  
12:30:00 PM

## **STATE ESTIMATION FOR TWO OUTPUT SYSTEMS IN DISCRETE TIME**

Claudia Califano (Universit`a di Roma, "La Sapienza", Italy)  
Salvatore Monaco (Universit`a di Roma, "La Sapienza", Italy)  
Dorothee Normand-Cyrot (LSS-CNRS, France)

23/08/2007

12:30:00 PM to  
12:50:00 PM

## **A GENERALIZED NORMAL FORM AND NONLINEAR OUTPUTS FOR A CASCADE OBSERVER**

Driss Boutat (LVR/ENSI, France)  
Salim Chaib (University of Orléans, France)  
Frédéric Kratz (LVR/ENSI, France)  
Hassan Hammouri (LAGEP / Univ Lyon, France)

23/08/2007

12:50:00 PM to  
01:10:00 PM

## **HOMOGENEOUS OBSERVERS WITH DYNAMIC HIGH GAINS**

Vincent Andrieu (Imperial College, United Kingdom)  
Laurent Praly (Ecole des Mines de Paris, France)  
Alessandro Astolfi (Imperial College, United Kingdom)

# New approaches to stability and stabilization

**NASS**

**S12**

**Regular Session**

23/08/2007  
11:10:00 AM to  
11:30:00 AM

## **CONSTRUCTIVE SAFETY USING CONTROL BARRIER FUNCTIONS**

Peter Wieland (University of Stuttgart, Germany)  
Frank Allgower (University of Stuttgart, Germany)

23/08/2007  
11:30:00 AM to  
11:50:00 AM

## **RELAXED CHARACTERIZATIONS OF SMOOTH PATCHY CONTROL LYAPUNOV FUNCTIONS**

Rafal Goebel (University of Washington, United States)  
Christophe Prieur (LAAS-CNRS, France)  
Andrew R. Teel (University of California, Santa Barbara, United States)

23/08/2007  
11:50:00 AM to  
12:10:00 PM

## **UNITING LOCAL AND GLOBAL OUTPUT FEEDBACK CONTROLLERS**

Christophe Prieur (LAAS-CNRS, France)  
Andrew R. Teel (University of California, Santa Barbara, United States)

23/08/2007  
12:10:00 PM to  
12:30:00 PM

## **TRANSITIONS BETWEEN LIMIT CYCLES FOR AN UNDERACTUATED SYSTEM: VIRTUAL HOLONOMIC CONSTRAINTS APPROACH**

Leonid Freidovich (Umea University, Sweden)  
Anton Shiriaev (Umea University, Sweden)  
Ian Manchester (Umea University, Sweden)

23/08/2007  
12:30:00 PM to  
12:50:00 PM

## **PORT-CONTACT SYSTEMS IN BILATERAL TELEMANIPULATION**

Cristian Secchi (University of Modena and Reggio Emilia, Italy)  
Stefano Stramigioli (EEMCS, University of Twente, The Netherlands)  
Cesare Fantuzzi (University of Modena and Reggio Emilia, Italy)

23/08/2007  
12:50:00 PM to  
01:10:00 PM

## **PORT-BASED ENERGY BALANCE ON COMPACT MANIFOLDS**

Gou Nishida (The Institute of Physical and Chemical Research (RIKEN), Japan)  
Ryuji Enomoto (Toba National College of Maritime Technology, Japan)  
Masaki Yamakita (Tokyo Institute of Technology/RIKEN, Japan)  
Zhiwei Luo (Kobe University/RIKEN, Japan)

# Tracking of nonlinear systems

TNS

S17

Regular Session

23/08/2007

11:10:00 AM to  
11:30:00 AM

## OUTPUT REGULATION: GEOMETRIC VIEWPOINTS

Francesco Delli Priscoli (Sapienza - Universita di Roma, Italy)

Alberto Isidori (Sapienza - Universita di Roma, Italy)

Marconi Lorenzo (Universita di Bologna, Italy)

23/08/2007

11:30:00 AM to  
11:50:00 AM

## TOWARDS A MODEL-FREE OUTPUT TRACKING OF SWITCHED NONLINEAR SYSTEMS

Romain Bourdais (LAGIS, France)

Michel Fliess (Ecole Polytechnique, France)

Cédric Join (Université Poincaré, France)

Wilfrid Perruquetti (LAGIS, France)

23/08/2007

11:50:00 AM to  
12:10:00 PM

## GENERALIZED NONLINEAR MANEUVER REGULATION

Jiangfeng Zhang (University of Pretoria, South Africa)

23/08/2007

12:10:00 PM to  
12:30:00 PM

## TRACKING OF NONHOLONOMIC CHAINED-FORM SYSTEMS WITHOUT PERSISTENT EXCITATION

Yu-Ping Tian (Southeast University, China)

Ke-Cai Cao (Southeast University, China)

23/08/2007

12:30:00 PM to  
12:50:00 PM

## STRAIGHT LINE PATH FOLLOWING FOR FORMATIONS OF UNDERACTUATED SURFACE VESSELS

Alexey Pavlov (Norwegian University of Science and Technology, Norway)

Even Børhaug (Norwegian University of Science and Technology, Norway)

Elena Panteley (CNRS-Supelec, France)

Kristin Yttersatd Pettersen (Norwegian University of Science and Technology, Norway)

23/08/2007

12:50:00 PM to  
01:10:00 PM

## A NEW PERSPECTIVE ON STABLE INVERSION OF NON-MINIMUM PHASE NONLINEAR SYSTEMS

Alexey Pavlov (Norwegian University of Science and Technology, Norway)

Kristin Y. Pettersen (Norwegian University of Science and Technology, Norway)

# Biological and biomedical systems

**BBS**

**S21**

**Regular Session**

23/08/2007

## **ON STABILITY OF A COMBINED GLEEVEC AND IMMUNE MODEL CHRONIC IN LEUKEMIA: EXPLOITING DELAY SYSTEM STRUCTURE**

11:10:00 AM to  
11:30:00 AM

Silviu-Iulian Niculescu (CNRS-Supelec, France)  
Peter Kim (Stanford University, United States)  
Peter Lee (Stanford University, United States)  
Doron Levy (Stanford University, United States)

23/08/2007

## **LINEAR AND NONLINEAR METHODS FOR GENE REGULATORY NETWORK INFERENCE**

11:30:00 AM to  
11:50:00 AM

Nicola Soranzo (SISSA, Italy)  
Ginestra Bianconi (ICTP, Italy)  
Claudio Altafini (SISSA, Italy)

23/08/2007

## **BIFURCATION ANALYSIS OF THE CONTROL MECHANISM OF PACEMAKER ACTIVITY IN A MATHEMATICAL CARDIAC CELL MODEL**

11:50:00 AM to  
12:10:00 PM

Karima Djabella (INRIA, France)  
Mayer Landau (CNRS, France)  
Michel Sorine (INRIA, France)

23/08/2007

## **A DIRECT-REVERSE TIME INTERVAL OBSERVER. APPLICATION TO BIOTECHNOLOGICAL MODELS.**

12:10:00 PM to  
12:30:00 PM

Marcelo Moisan (INRIA Sophia-Antipolis, France)  
Olivier Bernard (INRIA Sophia-Antipolis, France)

23/08/2007

## **MODELLING OF THE CO-INFECTION DYNAMICS OF HIV-1 AND M. TUBERCULOSIS**

12:30:00 PM to  
12:50:00 PM

Eben Francois du Toit (Nokia Siemens Networks, South Africa)

23/08/2007

## **ANAYSIS AND CONTROL DESIGN FOR HUMAN POSTURAL BALANCING SYSTEMS**

12:50:00 PM to  
01:10:00 PM

Chun-Liang Lin (National Chung Hsing University, Taiwan)  
Ching-Lung Li (National Chung Hsing University, Taiwan)  
Yu-Che Lin (National Chung Hsing University, Taiwan)

## Semi-Plenary 7

**SP07**

23/08/2007

**NETWORKED CONTROL SYSTEMS: AN EMULATION APPROACH TO CONTROLLER DESIGN**

02:10:00 PM to  
02:40:00 PM

Dragan Nesic (The University of Melbourne, Australia)

## Semi-Plenary 8

**SP08**

23/08/2007

**MODEL REDUCTION BY MOMENT MATCHING**

02:10:00 PM to  
02:40:00 PM

Alessandro Astolfi (Imperial College London and University of Rome "Tor Vergata", United Kingdom)

# Model predictive control with applications

**MPCA**

**S04**

**Regular Session**

23/08/2007

## **ON RELAXATIONS APPLICABLE TO MODEL PREDICTIVE CONTROL FOR SYSTEMS WITH BINARY CONTROL SIGNALS**

02:50:00 PM to  
03:10:00 PM

Daniel Axehill (Linköpings University, Sweden)  
Lieven Vandenberghe (University of California, Los Angeles, United States)  
Anders Hansson (Linköpings University, Sweden)

23/08/2007

## **NONLINEAR MODEL PREDICTIVE CONTROL OF A FAST PARALLEL ROBOT ACTUATED BY PNEUMATIC MUSCLES**

03:10:00 PM to  
03:30:00 PM

Dominik Schindele (University of Rostock, Germany)  
Harald Aschemann (University of Rostock, Germany)

23/08/2007

## **GEOMETRIC CONSTRUCTION OF PERIODIC TRAJECTORIES**

03:30:00 PM to  
03:50:00 PM

Kai Hoeffner (University of Stuttgart, Germany)  
Nicolas Hudon (Queen's University, Canada)  
Martin Guay (Queen's University, Canada)

23/08/2007

## **NETWORKED DECENTRALIZED MPC FOR UNICYCLE VEHICLES FORMATION**

03:50:00 PM to  
04:10:00 PM

Massimo Vaccarini (Università Politecnica delle Marche, Italy)  
Sauro Longhi (Università Politecnica delle Marche, Italy)

23/08/2007

## **AN INTELLIGENT GENERALIZED PREDICTIVE CONTROLLER FOR SHIP STEERING**

04:10:00 PM to  
04:30:00 PM

YaoHua Hu (Dongguan University of Technology, China)  
SuWu Xu (Dongguan University of Technology, China)  
Zongnian Zhang (Dongguan University of Technology, China)

23/08/2007

## **STABILIZING OUTPUT FEEDBACK RECEDING HORIZON CONTROL OF SAMPLED-DATA NONLINEAR SYSTEMS VIA THEIR APPROXIMATE DISCRETE-TIME MODELS**

04:30:00 PM to  
04:50:00 PM

Ahmed Elaiw (Al-Azhar University Assiut, Egypt)

# Robust estimation of nonlinear systems

RENS

S08

Regular Session

23/08/2007  
02:50:00 PM to  
03:10:00 PM

## NONLINEAR UNKNOWN INPUT OBSERVER ON A STOCHASTIC FRAMEWORK

Thibault Cheviron (LRBA-DGA/IRCCyN, France)  
Franck Plestan (IRCCyN, France)  
Abdelhamid Chriette (IRCCyN, France)

23/08/2007

## ROBUST H-INFINITY FILTERING FOR A CLASS OF NONLINEAR DISCRETE-TIME SYSTEMS

03:10:00 PM to  
03:30:00 PM

Daniel F. Coutinho (Pontifícia Univ. Católica do Rio Grande do Sul, Brazil)  
Carlos E. de Souza (Laboratório Nacional de Computação Científica, Brazil)  
Karina A. Barbosa (Laboratório Nacional de Computação Científica, Brazil)

23/08/2007

## A STOCHASTIC ROBUSTNESS APPROACH TO DESIGNING UNKNOWN INPUT OBSERVERS FOR NON-LINEAR SYSTEMS

03:30:00 PM to  
03:50:00 PM

Marcin Witczak (University of Zielona Gora, Poland)  
Przemyslaw Pretki (University of Zielona Gora, Poland)  
Jozef Korbicz (University of Zielona Gora, Poland)

23/08/2007

## ON THE HAMILTONIAN TECHNIQUES FOR DESIGNING NONLINEAR OBSERVERS UNDER SET-MEMBERSHIP UNCERTAINTY

03:50:00 PM to  
04:10:00 PM

Mikhail Gusev (Ural Branch of RAS, Russia)  
Alexander Kurzhanski (Moscow State (Lomonosov) University, Russia)

23/08/2007

## ANALYSIS OF HOPF BIFURCATION FOR AN INTERNET CONGESTION CONTROL SYSTEM

04:10:00 PM to  
04:30:00 PM

Mohammad Reza Jahed Motlagh (Iran University of Science and Technology, Iran)  
Behrooz Rezaie (Iran University of Science and Technology, Iran)  
Siavash Khorsandi (Amirkabir University of Technology, Iran)  
Morteza Analoui (Iran University of Science and Technology, Iran)

23/08/2007

## ROBUST TRAJECTORY TRACKING FOR A CLASS OF UNCERTAIN NONLINEAR SYSTEMS

04:30:00 PM to  
04:50:00 PM

Engelbert Gruenbacher (Linz Center of Mechatronics, Austria)  
Luigi del Re (Johannes Kepler University Linz, Austria)

# Stability and stabilization of systems with nonlinearities in the input

**SSSNI**

**S13**

**Invited Session**

Organized by Christophe Prieur and Sophie Tarbouriech, LAAS-CNRS, France

23/08/2007

## **STABILIZATION OF A CLASS OF NONLINEAR SYSTEMS WITH SATURATING ACTUATORS VIA SLIDING MODE CONTROL**

02:50:00 PM to  
03:10:00 PM

Maria Letizia Corradini (Università di Camerino, Italy)  
Giuseppe Orlando (Università Politecnica delle Marche, Italy)  
Valentina Orsini (Università Politecnica delle Marche, Italy)  
Gianfranco Parlangeli (Università di Lecce, Italy)

23/08/2007

## **ROBUST ADAPTIVE CONTROL OF NONLINEAR SYSTEMS WITH UNKNOWN INPUT HYSTERESIS WITH KP PRESENTATION**

03:10:00 PM to  
03:30:00 PM

Yu-Feng Wang (Concordia University, Canada)  
Chun-Yi Su (Concordia University, Canada)  
Henry Hong (Concordia University, Canada)

23/08/2007

## **STABILITY ANALYSIS FOR SYSTEMS WITH BACKLASH AND SATURATED ACTUATOR**

03:30:00 PM to  
03:50:00 PM

Sophie Tarbouriech (LAAS-CNRS, France)  
Christophe Prieur (LAAS-CNRS, France)

23/08/2007

## **A PRACTICAL METHOD FOR FIXED-ORDER ANTI-WINDUP DESIGN**

03:50:00 PM to  
04:10:00 PM

Jean-Marc Biannic (ONERA, France)  
Clément Roos (ONERA/SUPAERO, France)  
Sophie Tarbouriech (LAAS/CNRS, France)

23/08/2007

## **STABILITY CRITERIA FOR RATE LIMITED LUR'E SYSTEMS WITH CONNECTIONS TO MAGNITUDE LIMITS AND ANTI-WINDUP**

04:10:00 PM to  
04:30:00 PM

Murray Kerr (University of Leicester, United Kingdom)  
Matthew Turner (University of Leicester, United Kingdom)  
Ian Postlethwaite (University of Leicester, United Kingdom)

23/08/2007

## **NONLINEAR L2 ANTI-WINDUP FOR ENLARGED STABILITY REGIONS AND REGIONAL PERFORMANCE**

04:30:00 PM to  
04:50:00 PM

Sergio Galeani (Università di Roma, Tor Vergata, Italy)  
Simona Onori (Università di Roma, Tor Vergata, Italy)  
Andrew R. Teel (University of California, Santa Barbara, United States)  
Luca Zaccarian (Università di Roma, Tor Vergata, Italy)

# Algebraic approach to nonlinear systems

AANS

S18

Regular Session

23/08/2007

02:50:00 PM to  
03:10:00 PM

## CONSTRUCTION OF FLAT OUTPUTS BY REDUCTION AND ELIMINATION

Kurt Schlacher (Johannes Kepler University Linz, Austria)  
Markus Schöberl (Johannes Kepler University Linz, Austria)

23/08/2007

03:10:00 PM to  
03:30:00 PM

## GENERALIZED STATE EQUATIONS FOR CONTINUOUS-TIME BILINEAR INPUT-OUTPUT EQUATIONS: REMOVING THE INPUT DERIVATIVES

Tanel Mullari (Institute of Cybernetics at TUT, Estonia)  
Ülle Kotta (Institute of Cybernetics at TUT, Estonia)  
Palle Kotta (Institute of Cybernetics at TUT, Estonia)  
Alan Zinober (The University of Sheffield, United Kingdom)

23/08/2007

03:30:00 PM to  
03:50:00 PM

## IRREDUCIBILITY CONDITIONS FOR NONLINEAR INPUT-OUTPUT EQUATIONS ON HOMOGENEOUS TIME SCALES

Zbigniew Bartosiewicz (Bialystok Technical University, Poland)  
Ülle Kotta (Institute of Cybernetics at TUT, Estonia)  
Ewa Pawluszewicz (Bialystok Technical University, Poland)  
Malgorzata Wyrwas (Institute of Cybernetics at TUT, Estonia)

23/08/2007

03:50:00 PM to  
04:10:00 PM

## PSEUDO-LINEAR ALGEBRA: A POWERFUL TOOL IN UNIFICATION OF THE STUDY OF NONLINEAR CONTROL SYSTEMS

Miroslav Halás (Slovak University of Technology, Slovakia)  
Ülle Kotta (Tallinn University of Technology, Estonia)

23/08/2007

04:10:00 PM to  
04:30:00 PM

## THE POLE-ZERO STRUCTURE OF NONLINEAR CONTROL SYSTEMS

Anna Maria Perdon (Università Politecnica delle Marche, Italy)  
Claude Moog (IRCCyN, France)  
Giuseppe Conte (Università Politecnica delle Marche, Italy)

# Nonlinear estimation and control of biochemical systems

**NECBS**

**S22**

**Invited Session**

Organized by Alain Vande Wouwer, Faculté Polytechnique de Mons, Belgium; Isabelle Queinnec, LAAS-CNRS, France

23/08/2007

## **PETRI NET TOOLS FOR THE ANALYSIS OF PERSISTENCE IN CHEMICAL NETWORKS**

02:50:00 PM to  
03:10:00 PM

David Angeli (University of Florence, Italy)  
Patrick De Leenheer (University of Florida, United States)  
Eduardo Sontag (Rutgers University, United States)

23/08/2007

## **DISCRETE-TIME INTERVAL OBSERVERS APPLIED TO CULTURES OF PHYTOPLANKTON**

03:10:00 PM to  
03:30:00 PM

Guillaume Goffaux (Faculté Polytechnique de Mons, Belgium)  
Alain Vande Wouwer (Faculté Polytechnique de Mons, Belgium)  
Olivier Bernard (INRIA, France)

23/08/2007

## **ON AUTOMATIC SEEKING OF OPTIMAL STEADY-STATES IN BIOCHEMICAL PROCESSES**

03:30:00 PM to  
03:50:00 PM

Georges Bastin (CESAME - Université Catholique de Louvain, Belgium)  
Dragan Nesic (The University of Melbourne, Australia)  
Ying Tan (The University of Melbourne, Australia)  
Iven Mareels (The University of Melbourne, Australia)

23/08/2007

## **A FORMAL FRAMEWORK FOR MULTIPLICITY DETECTION AND ITS IMPLICATIONS IN ROBUST CONTROL OF BIOCHEMICAL NETWORKS**

03:50:00 PM to  
04:10:00 PM

Irene Otero-Muras (Spanish Council for Scientific Research, Spain)  
Antonio A. Alonso (Spanish Council for Scientific Research, Spain)  
Julio R. Banga (Spanish Council for Scientific Research, Spain)

23/08/2007

## **ON THE USE OF NONLINEAR RECEDING-HORIZON OBSERVERS IN BATCH TERPOLYMERIZATION PROCESSES WITH PARTIALLY UNMODELLED DYNAMICS: FORMULATION AND EXPERIMENTAL VALIDATION**

04:10:00 PM to  
04:30:00 PM

Mazen Alamir (CNRS-University of Grenoble, France)  
Nida Sheibat-Othman (LAGEP-University of Lyon, France)  
Sami Othman (LAGEP University of Lyon, France)

23/08/2007

## **CONVERGENCE OF MULTI-UNIT OPTIMIZATION WITH NON-IDENTICAL UNITS: APPLICATION TO THE OPTIMIZATION OF A BIOREACTOR**

04:30:00 PM to  
04:50:00 PM

Lyne Woodward (École Polytechnique de Montréal, Canada)  
Michel Perrier (École Polytechnique de Montréal, Canada)  
Bala Srinivasan (École Polytechnique de Montréal, Canada)

# Posters 1

## POSTERS 1

24/08/2007

### **AN ADAPTIVE ROBUST STATE OBSERVER SCHEME FOR A CLASS OF UNCERTAIN NONLINEAR DYNAMICAL SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Hansheng Wu (Prefectural University of Hiroshima, Japan)

24/08/2007

### **CRITERIA AND TIME HORIZON IN FEEDFORWARD MPC FOR NON-LINEAR SYSTEMS WITH TIME DELAYS**

09:40:00 AM to  
10:40:00 AM

Torbjorn Wigren (Uppsala University, Sweden)  
Linda Brus (Uppsala University, Sweden)

24/08/2007

### **ADAPTIVE STATE FEEDBACK CONTROL OF NONLINEARLY PARAMETERIZED TIME-DELAY SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Xiaohong Jiao (Yanshan University, China)  
Tielong Shen (Sophia University, Japan)  
Yuanzhang Sun (Tsinghua University, China)

24/08/2007

### **SYNTHESIS OF COMPLETE ORTHONORMAL FRACTIONAL BASIS FUNCTIONS WITH PRESCRIBED POLES**

09:40:00 AM to  
10:40:00 AM

Huseyin Akcay (Anadolu University, Turkey)

24/08/2007

### **ESTIMATION OF PARSIMONIOUS DISCRETE VOLTERRA SERIES**

09:40:00 AM to  
10:40:00 AM

Robert Harrison (The University of Sheffield, United Kingdom)  
Tony Dodd (The University of Sheffield, United Kingdom)

24/08/2007

### **DATA-BASED VALIDATION OF NONLINEAR MODELS**

09:40:00 AM to  
10:40:00 AM

Matias Waller (Åland Polytechnic, Finland)  
Mikaal Rönn (Åland Polytechnic, Finland)  
Henrik Saxén (Åbo Akademi University, Finland)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **NONLINEAR CONTROL OF A SEQUENTIAL INSPECTION OPERATION**

Meir Pachter (Air Force Institute of Technology, United States)  
Phillip Chandler (AFRL, United States)  
Darbha Swaroop (AFRL, United States)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **NONLINEAR CONTROL SYSTEM INVERSION USING LIE SYMMETRIES**

Richard Ocaya (University of the Free-State, South Africa)  
Brian Wigdorowitz (University of the Witwatersrand, South Africa)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **CONSTRUCTIVE TRANSFORMATION OF NONLINEAR SYSTEMS INTO A SPECIAL STATE AFFINE MIMO FORMS AND NONLINEAR OBSERVERS**

Ibrahim Souleiman (University of Djibouti, Republic of Djibouti)  
Alain Glumineau (IRCCyN, France)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **A FOLIATION FOR UNKNOWN INPUTS RECONSTRUCTION**

Salim Chaib (University of Orleans, France)  
Driss Boutat (LVR/ ENSIB, France)  
Abderraouf Benali (LVR/ ENSIB, France)  
Frédéric Kratz (LVR/ ENSIB, France)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **EXPLICIT FORM OF LYAPUNOV FUNCTIONS FOR A CLASS OF NONLINEAR FEEDBACK SYSTEMS AUGMENTED BY OBSERVERS**

Anton Shiriaev (Umea University, Sweden)  
Rolf Johansson (Lund University, Sweden)  
Anders Robertsson (Lund University, Sweden)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **ON OPTIMIZING NONLINEAR ADAPTIVE CONTROL ALLOCATION WITH ACTUATOR DYNAMICS**

Johannes Tjønnås (Norwegian University of Science and Technology, Norway)  
Tor Arne Johansen (Norwegian University of Science and Technology, Norway)

24/08/2007

**ON STABILITY AND CONTROL OF SYSTEMS WITH TIME-VARYING SAMPLING PERIOD AND TIME DELAY**

09:40:00 AM to  
10:40:00 AM

Michal Izák (University of Kaiserslautern, Germany)  
Daniel Görge (University of Kaiserslautern, Germany)  
Steven Liu (University of Kaiserslautern, Germany)

24/08/2007

**INTERPOLATION PROBLEMS ON RIEMANNIAN MANIFOLDS - A GEOMETRIC APPROACH -**

09:40:00 AM to  
10:40:00 AM

Rui Rodrigues (University of Coimbra, Portugal)  
Fátima Silva Leite (University of Coimbra, Portugal)

24/08/2007

**GEOMETRIC ANALYSIS OF TIME VARIANT HAMILTONIAN CONTROL SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Markus Schöberl (Johannes Kepler University Linz, Austria)  
Richard Stadlmayr (Linz Center of Mechatronics, Austria)  
Kurt Schlacher (Johannes Kepler University Linz, )

24/08/2007

**H-INFINITY SMOOTHER FOR LIPSCHITZ NONLINEAR SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Philippe Neveux (University of Avignon, France)  
Eric Blanco (Ecole Centrale of Lyon, France)

24/08/2007

**GEOMETRICAL CONDITIONS FOR OBSERVER ERROR LINEARIZATION VIA  $\mathbb{R}^{0,1,\dots,(N-2)-\text{INT}}$**

09:40:00 AM to  
10:40:00 AM

Driss Boutat (ENSI de Bourges, France)

24/08/2007

**GEOMETRICAL CONDITIONS FOR OBSERVER ERROR LINEARIZATION WITH A DIFFEOMORPHISM ON THE OUTPUTS.**

09:40:00 AM to  
10:40:00 AM

Driss Boutat (LVR/ENSI, France)  
Abderraouf Benali (LVR/ENSI, France)  
Hassan Hammouri (LAGEP, France)

24/08/2007

**MULTIVARIABLE RBF-ARX MODEL-BASED PREDICTIVE CONTROL FOR NONLINEAR SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Hui Peng (Central South University, China)

24/08/2007

**CONSTRAINED CONTROLLABILITY OF SEMILINEAR SYSTEMS WITH MULTIPLE DELAYS IN CONTROL**

09:40:00 AM to  
10:40:00 AM

Klamka Jerzy (Silesian University of Technology, Poland)

24/08/2007

**MODEL-FREE HIGH ORDER DIFFERENTIAL STATES OBSERVER FOR NONLINEAR AFFINE SYSTEM**

09:40:00 AM to  
10:40:00 AM

Guoyuan Qi (Tshwane University of Technology, South Africa)  
Michaël Antonie van Wyk (Tshwane University of Technology, South Africa)  
Barend Jacobus van Wyk (Tshwane University of Technology, South Africa)

24/08/2007

**STABILIZATION OF LINEAR SWITCHED CONTROLLED SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Zoltan Szabo (Hungarian Academy of Sciences, Hungary)  
Jozsef Bokor (Hungarian Academy of Sciences, Hungary)  
Gary Balas (University of Minnesota, United States)

24/08/2007

**CONTROLLABILITY OF ISOSPECTRAL BILINEAR CONTROL SYSTEMS ON COMPLEX FLAG MANIFOLDS**

09:40:00 AM to  
10:40:00 AM

Claudio Altafini (SISSA, Italy)

24/08/2007

**STRONG FEASIBILITY IN INPUT-MOVE-BLOCKING MODEL PREDICTIVE CONTROL**

09:40:00 AM to  
10:40:00 AM

Ravi Gondhalekar (Tokyo Institute of Technology, Japan)  
Jun-ichi Imura (Tokyo Institute of Technology, Japan)

24/08/2007

09:40:00 AM to  
10:40:00 AM

## ROBUST FLATNESS BASED CONTROLLER DESIGN USING INTERVAL METHODS

Marco Kletting (University of Ulm, Germany)

Felix Anritter (University of Erlangen-Nürnberg, Germany)

Eberhard P. Hofer (University of Ulm, Germany)

## Posters 2

### POSTERS 2

24/08/2007

#### **APPLICATION OF RESET CONTROL TO A BATCH REACTOR IN THE PRECIOUS GROUP METALS INDUSTRY**

09:40:00 AM to  
10:40:00 AM

Roanne Lahee (Anglo Platinum, South Africa)

24/08/2007

#### **AN EXTENDED UNKNOWN INPUT OBSERVER-BASED APPROACH TO FAULT DIAGNOSIS OF A TWO-TANK SYSTEM**

09:40:00 AM to  
10:40:00 AM

Jozef Korbicz (University of Zielona Gora, Poland)  
Marcin Witczak (University of Zielona Gora, Poland)

24/08/2007

#### **EXTRACTION OF MOTION FOR 4-WHEEL DRIVE, 4-WHEEL STEER MOBILE ROBOT WITH REDUCED ORDER HAMILTONIAN MODEL**

09:40:00 AM to  
10:40:00 AM

Kursat Yalcin (Istanbul Technical University, Turkey)  
Murat Yesiloglu (Istanbul Technical University, Turkey)  
Hakan Temeltas (Istanbul Technical University, Turkey)

24/08/2007

#### **FEEDBACK LINEARIZATION BASED CONTROL OF A ROTATIONAL HYDRAULIC DRIVE**

09:40:00 AM to  
10:40:00 AM

Jaho Seo (ETS, Canada)  
Ravinder Venugopal (Sysendes, Inc. & ETS, Canada)  
Jean-Pierre Kenne (ETS, Canada)

24/08/2007

#### **NEURAL NETWORK-BASED DYNAMIC INVERSION CONTROLLER FOR FIGHTER AIRCRAFTS**

09:40:00 AM to  
10:40:00 AM

Jimoh Pedro (University of the Witwatersrand, South Africa)  
Nicolas Meyer (University of the Witwatersrand, South Africa)

24/08/2007

**IDENTIFIABILITY OF THE PARAMETERS OF A NONLINEAR MODEL OF THE CEREBROSPINAL FLUID SYSTEM**

09:40:00 AM to  
10:40:00 AM

Ian Manchester (Umea University, Sweden)  
Kennet Andersson (Umea University Hospital, Sweden)  
Anders Eklund (Umea University Hospital, Sweden)  
Anton Shiriaev (Umea University, Sweden)

24/08/2007

**HYBRID OPTIMAL CONTROL OF AN AUTOMATED MANUAL TRANSMISSION SYSTEM**

09:40:00 AM to  
10:40:00 AM

Gianluca Lucente (University of Bologna, Italy)  
Marcello Montanari (University of Bologna, Italy)  
Carlo Rossi (University of Bologna, Italy)

24/08/2007

**PID+ BACKSTEPPING CONTROL OF RELATIVE SPACECRAFT ATTITUDE**

09:40:00 AM to  
10:40:00 AM

Thomas R. Krogstad (Norwegian University of Science, Norway)  
Raymond Kristiansen (Narvik University College, Norway)  
Jan Tommy Gravdahl (Norwegian University of Science, Norway)  
Per Johann Nicklasson (Narvik University College, Norway)

24/08/2007

**OPTIMAL CLOSED-LOOP CONTROLLER DESIGN FOR AN ION EXCHANGE PROCESS USED FOR DESALINATION OF WATER**

09:40:00 AM to  
10:40:00 AM

N Dube (Cape Peninsula University of Technology, South Africa)

24/08/2007

**LOGIC BASED DESIGN OF OPTIMAL RECONFIGURATION STRATEGIES FOR SHIP POWER SYSTEMS**

09:40:00 AM to  
10:40:00 AM

Harry Kwatny (Drexel University, United States)  
Ed Mensah (Drexel University, United States)  
Dagmar Niebur (Drexel University, United States)  
Gaurav Bajpai (Techno-Sciences, Inc., United States)  
Carole Teolis (Techno-Sciences, Inc., United States)

24/08/2007

**GPS-DENIED SOURCE SEEKING FOR A NONHOLONOMIC UNICYCLE VIA HEADING CONTROL**

09:40:00 AM to  
10:40:00 AM

Jennie Cochran (University of California, San Diego, United States)  
Antranik Siranosian (University of California, San Diego, United States)  
Nima Ghods (University of California, San Diego, United States)  
Daniel Arnold (University of California, San Diego, United States)  
Miroslav Krstic (University of California, San Diego, United States)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **MODEL AND ROBUST CONTROL OF AN ELECTROPNEUMATIC ACTUATOR ON A EXPERIMENTAL SETUP**

Alexis Girin (IRCCyN, France)  
Franck Plestan (IRCCyN, France)  
Xavier Brun (AMPERE-INSA de Lyon, France)  
Alain Glumineau (IRCCyN, France)  
Mohamed Smaoui (AMPERE-INSA de Lyon, )

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **SENSORLESS SLIDING MODE CONTROL FOR ELECTROMAGNET**

Pavel Shavrin (Togliatti State University, Russia)  
Alexander Gostkov (Togliatti State University, Russia)  
Sergey Kochetkov (Togliatti State University, Russia)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **NEURO-FUZZY CONTROL OF A SINGLE POINT LATHE CUTTING TOOL**

R Marumo (University of Botswana, Botswana)  
O Motsamai (University of Botswana, Botswana)  
T Bodika (University of Botswana, Botswana)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **A NEURAL NETWORK MODEL FOR CONTROL OF WASTEWATER TREATMENT PROCESSES**

Carl Kriger (Cape Peninsula University of Technology, South Africa)  
Raynitchka Tzoneva (Cape Peninsula University of Technology, South Africa)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **FAULT-TOLERANT CONTROL OF HEAVY HAUL TRAINS**

Xiangtao Zhuan (University of Pretoria, South Africa)

24/08/2007

09:40:00 AM to  
10:40:00 AM

### **OBSERVER-BASED BRAKE CONTROL FOR RAILWAYS**

Gaspar Peter (Computer and Automation Research Institute, Hungary)  
Szabo Zoltan (Computer and Automation Research Institute, Hungary)  
Bokor Jozsef (Computer and Automation Research Institute, Hungary)

24/08/2007

**A FLAT MODEL PREDICTIVE CONTROLLER FOR TRAJECTORY TRACKING IN  
IMAGE BASED VISUAL SERVOING**

09:40:00 AM to  
10:40:00 AM

Allibert Guillaume (Université d'Orléans, France)  
Courtial Estelle (Université d'Orléans, France)  
Touré Youssoufi (Université d'Orléans, France)

# Nonlinear control in industrial applications

NCIA

S25

Regular Session

24/08/2007

## CONTROL LAWS FOR AUTOMATIC TAKE-OFF USING ROBUST NONLINEAR INVERSION TECHNIQUES

11:10:00 AM to  
11:30:00 AM

Fabrice Villaume (Airbus France SAS, France)  
Matthieu Jeanneau (Airbus France SAS, France)

24/08/2007

## ROBUST MPC OF A RUN-OF-MINE ORE MILLING CIRCUIT

11:30:00 AM to  
11:50:00 AM

LC Coetzee (University of Pretoria, South Africa)  
IK Craig (University of Pretoria, South Africa)

24/08/2007

## SIMULATED NEUROCONTROL OF AN AUTOGENOUS MILL WITH EVOLUTIONARY REINFORCEMENT LEARNING

11:50:00 AM to  
12:10:00 PM

J W De Villiers Groenewald (University of Stellenbosch, South Africa)  
Chris Aldrich (University of Stellenbosch, South Africa)  
Jacques J Eksteen (University of Stellenbosch, South Africa)  
Alex v E Conradie (University of Stellenbosch, South Africa)  
Leon P Coetzer (Anglo Platinum Management Services, South Africa)

24/08/2007

## MOVING HORIZON ESTIMATION FOR AN INDUSTRIAL GAS PHASE POLYMERIZATION REACTOR

12:10:00 PM to  
12:30:00 PM

Jasmeer Ramlal (Sasol Polymers, South Africa)  
Kenneth Allsford (Honeywell International, United States)  
John Hedengren (ExxonMobil Chemical, United States)

24/08/2007

## A VARIABLE STRUCTURE ADAPTIVE POLE PLACEMENT CONTROL APPLIED TO THE SPEED CONTROL OF A THREE-PHASE INDUCTION MOTOR

12:30:00 PM to  
12:50:00 PM

Francisco Silva Junior (Federal University of Rio Grande do Norte, Brazil)  
Aldayr Araujo (Federal University of Rio Grande do Norte, Brazil)

24/08/2007

## ADAPTIVE STATE ESTIMATION IN A SHEAR BUILDING

12:50:00 PM to  
01:10:00 PM

René Jiménez (Universidad Nacional Autónoma de México, Mexico)  
Luis Alvarez-Icaza (Universidad Nacional Autónoma de México, Mexico)

# Robust observers of nonlinear systems

**RONs**

**S09**

**Regular Session**

24/08/2007  
11:10:00 AM to  
11:30:00 AM

## **TYRE/ROAD FRICTION ESTIMATION USING A SLIDING MODE BASED OBSERVER**

Nitin Patel (University of Leicester, United Kingdom)  
Christopher Edwards (University of Leicester, United Kingdom)  
Sarah Spurgeon (University of Leicester, United Kingdom)

24/08/2007

## **DESIGN OF A CONFIDENCE INTERVAL OBSERVER - APPLICATION TO VEHICLE POSITIONING**

11:30:00 AM to  
11:50:00 AM

Guillaume Goffaux (Faculté Polytechnique de Mons, Belgium)  
Alain Vande Wouwer (Faculté Polytechnique de Mons, Belgium)  
Marcel Remy (Faculté Polytechnique de Mons, Belgium)

24/08/2007

## **SENSOR FDI FOR A CLASS OF NONLINEAR SYSTEMS BASED ON A SLIDING MODE OBSERVER**

11:50:00 AM to  
12:10:00 PM

Xing-Gang Yan (University of Leicester, United Kingdom)  
Christopher Edwards (University of Leicester, United Kingdom)

24/08/2007

## **DESIGN AND ANALYSIS OF A NONLINEAR OBSERVER FOR A HYDRAULIC SERVO SYSTEM**

12:10:00 PM to  
12:30:00 PM

Maria Werlefors (Uppsala University, Sweden)  
Alexander Medvedev (Uppsala University, Sweden)

24/08/2007

## **SLIDING MODE CONTROLLER DESIGN FOR SENSORLESS INDUCTION MOTOR: EXPERIMENTAL TESTS ON LOW FREQUENCIES BENCHMARK**

12:30:00 PM to  
12:50:00 PM

Dramane Traore (IRCCyN, France)  
Jesus De Leon (Universidad Autonoma, Mexico)  
Alain Glumineau (IRCCyN, France)  
Luc Loron (IREENA, France)

24/08/2007

## **AN ALGEBRAIC PARAMETER ESTIMATION APPROACH FOR THE ADAPTIVE OBSERVER-CONTROLLER BASED REGULATION OF THE "BOOST" CONVERTER**

12:50:00 PM to  
01:10:00 PM

Hebertt Sira-Ramirez (Cinvestav-IPN, Mexico)  
Mario Spinetti-Rivera (Universidad Politecnica de Catalunya, Spain)  
Enric Fossas-Collet (Universidad Politecnica de Catalunya, Spain)

# Nonlinear system stabilization

**NSS**

**S14**

**Regular Session**

24/08/2007

## **A NOTE ON ROBUST NONLINEAR CONTROL OF FEEDFORWARD SYSTEMS WITH UNMODELED DYNAMICS**

11:10:00 AM to  
11:30:00 AM

Tianshi Chen (The Chinese University of Hong Kong, Hong Kong)  
Jie Huang (The Chinese University of HongKong, Hong Kong)

24/08/2007

## **SOME RESULTS ON ROBUST OUTPUT FEEDBACK STABILIZATION OF NONLINEAR SYSTEMS**

11:30:00 AM to  
11:50:00 AM

Lorenzo Marconi (CASY-DEIS University of Bologna, Italy)  
Laurent Praly (École des Mines de Paris, France)

24/08/2007

## **MATRIX SET MEASURE FOR STABILITY OF SWITCHED LINEAR SYSTEMS**

11:50:00 AM to  
12:10:00 PM

Zhendong Sun (South China University of Technology, China)

24/08/2007

## **STABILIZATION OF HOMOGENEOUS SYSTEMS USING IMPLICIT CONTROL LYAPUNOV FUNCTIONS**

12:10:00 PM to  
12:30:00 PM

Hisakazu Nakamura (Nara Institute of Science and Technology, Japan)  
Nami Nakamura (Nara Institute of Science and Technology, Japan)  
Hirokazu Nishitani (Nara Institute of Science and Technology, Japan)

24/08/2007

## **ON FEEDBACK STABILIZATION OF NONAFFINE DISCRETE TIME NONLINEAR SYSTEMS WITH TIME DELAYS**

12:30:00 PM to  
12:50:00 PM

Woihida Aggoune (ECS-ENSEA, France)

# Nonlinear control in power and electrical drives

**NCPED**

**S24**

**Regular Session**

24/08/2007

## **THE GAP BETWEEN NONLINEAR CONTROL THEORIES AND APPLICATIONS IN POWER SYSTEMS**

11:10:00 AM to  
11:30:00 AM

Yuanzhang Sun (Tsinghua University, Beijing, China)

Fang Yang (Tsinghua University, Beijing, China)

24/08/2007

## **VOLTAGE REGULATION IN NETWORKED ELECTRICAL POWER SYSTEMS FOR DISTRIBUTED GENERATION: A CONSTRAINED SUPERVISORY APPROACH**

11:50:00 AM to  
12:10:00 PM

Alessandro Casavola (Universita' della Calabria, Italy)

Giuseppe Franze' (Universita' della Calabria, Italy)

Natalino Carelli (Universita' della Calabria, Italy)

24/08/2007

## **ESTIMATION OF THE REGION OF ATTRACTION FOR A BOOST DC-AC CONVERTER CONTROL LAW**

12:10:00 PM to  
12:30:00 PM

Carolina Albea (University of Seville, Spain)

Francisco Gordillo (University of Seville, Spain)

24/08/2007

## **TRACKING CONTROL OF THE ANGULAR VELOCITY OF A DC-MOTOR VIA A BOOST-CONVERTER**

12:30:00 PM to  
12:50:00 PM

Felix Anritter (Universität Erlangen-Nürnberg, Germany)

Johannes Tautz (Universität Erlangen-Nürnberg, Germany)

24/08/2007

## **ON THE GENERALIZED PROPORTIONAL INTEGRAL MULTILEVEL SIGMA DELTA SLIDING MODE CONTROL OF A "BUCK" CONVERTER**

12:50:00 PM to  
01:10:00 PM

Hebertt Sira-Ramirez (CINVESTAV-IPN, Mexico)

# Lab applications of nonlinear systems

LANS

S23

Regular Session

24/08/2007

11:10:00 AM to  
11:30:00 AM

## A NOTE ON THE CONTROL OF A SPHERICAL INVERTED PENDULUM

Guangyu Liu (The University of Melbourne, Australia)  
Mareels Iven (The University of Melbourne, Australia)  
Nesic Dragan (The University of Melbourne, Australia)

24/08/2007

11:30:00 AM to  
11:50:00 AM

## OUTPUT FEEDBACK DESIGN OF A TWIN PENDULUM SYSTEM IN PRESENCE OF SENSOR BIAS

André Murilo A. Pinto (GIPSA-Lab, France)  
Mazen Alamir (CNRS/GIPSA, France)

24/08/2007

11:50:00 AM to  
12:10:00 PM

## A VELOCITY ESTIMATOR RELYING ON FRICTION OBSERVER: APPLICATION TO INVERTED PENDULUM STABILIZATION

Roland Lenain (Cemagref, France)  
Anders Robertsson (Lund University, Sweden)  
Rolf Johansson (Lund University, Sweden)  
Anton Shiriaev (Umea University, Sweden)  
Michel Berducat (Cemagref, France)

24/08/2007

12:10:00 PM to  
12:30:00 PM

## LINEARIZATION BASED H-INF ROBUST STABILIZING PID CONTROL FOR ACTIVE MAGNETIC BEARINGS

Fuat Gurleyen (ITU, Turkey)  
Cagri Bahadir (ITU, Turkey)

24/08/2007

12:30:00 PM to  
12:50:00 PM

## DISCRETE-TIME MODEL REFERENCE CONTROLLER DESIGN FOR A COMBUSTION ENGINE TEST BENCH

Dina Shona Laila (Johannes Kepler University Linz, Austria)  
Engelbert Gruenbacher (Johannes Kepler University Linz, Austria)  
Luigi del Re (Johannes Kepler University Linz, Austria)

# Plenary 4

**P04**

24/08/2007

## **TAKING ADVANTAGE OF HOMOGENEITY: A GENERAL FRAMEWORK FOR OUTPUT FEEDBACK CONTROL OF UNCERTAIN NONLINEAR SYSTEMS**

02:10:00 PM to  
03:10:00 PM

Wei Lin (Case Western Reserve University, United States)  
Hao Lei (Case Western Reserve University, United States)

## REGISTRATION

Registration is done electronically over the Internet. Please visit the NOLCOS registration web site to register:

<https://www.nolcos2007.org.za/registration/>

Registration, accommodation, transfers and tour bookings are all done in one payment. Competitive rates have been negotiated by our tour operator, *Travel and Conferencing Worldwide* ([registration@nolcos2007.org.za](mailto:registration@nolcos2007.org.za)), for hotels (see the section on Hotel Accommodation), tours (see the sections on Day- and Pre and Post Tours) and transfers from and to the airport.

The registration procedure is as follows:

**Step 1: Register main delegate.**

**Step 2: Register accompanying persons.** Accompanying person is defined as someone traveling with the main delegate but not attending the technical part of the symposium; but rather social events such as the icebreaker, banquet and tours.

**Step 3: Select accommodation and specify airport transfers if required.**

**Step 4: Select technical tours.**

**Step 5: Select day tours.**

**Step 6: Select pre or post symposium tours.**

**Step 7: Review registration details.**

**Step 8: Submit registration.** Your details are sent to the organizers and you will receive an invoice for the outstanding amount.

### **Please Note:**

- you can leave the registration and return at any time to finalize the registration. The registration is not complete until you submit the registration.
- Payment is done either by *internet banking* (preferred), *credit card* (acceptable) or *bank transfer*.
- Proof of payment must be sent to symposium organizer.
- All prices are quoted in **South African Rand** (ZAR for short)
- Any queries or special needs regarding the registration such as receiving separate invoices *etc.* can be communicated to us and we will attend to it as best we can.

## CONFIRMATION

On receipt of your registration in writing, a confirmation will be sent with the invoice.

## SYMPOSIUM FEES

The regular registration fee includes all technical sessions, one copy of the preprints, tea and coffee, lunch, the cocktail party, and the banquet. The day registration fee includes one copy of the preprints, and technical sessions, refreshments and lunch on the specific day only. Attendance of social events is excluded from the day fee. Separate tickets for day attendees and accompanying persons for the social events can be obtained as indicated on the registration website. The registration fees are\*:

Early registration fee <sup>†</sup> (up to 22 June 2007)	ZAR 4050
Normal registration fee <sup>†</sup> (after 22 June 2007)	ZAR 4500
Early student registration fee <sup>†</sup> (up to 22 June 2007)	ZAR 3060
Normal student registration fee <sup>†</sup> (after 22 June 2007)	ZAR 3375
Early single day rate <sup>‡</sup> (up to 22 June 2007)	ZAR 2025
Normal single day rate <sup>‡</sup> (after to 22 June 2007)	ZAR 2250

## PAYMENT INSTRUCTION

All payments by delegates must be made in South African Rand (ZAR)

The following payment methods are accepted (in preferred order): internet transfer, credit card, bank transfer.

Bank details will be provided on the invoice that you will receive after submitting your registration.

**When payment is made, delegates are required to indicate their first name and surname on the bank deposit slip, which must please be faxed to the DECOM-TT 2000 Secretariat together with a cover letter (Fax no. +27 12 362 5000).**

### Credit Card

Only VISA, MasterCard, American Express and Diners Club will be accepted. The name and surname of the cardholder, the card number, the expiry date and CVC numbers must be included on the registration form.

**Your participation will be confirmed when the payment has been received.**

\* Transfer costs are paid by the delegate

<sup>†</sup> Registration includes coffee breaks, lunches, the banquet and preprints per delegate. Please note: complete pre-payment of the full registration fee (ZAR 4050 for early and ZAR 4500 for normal) is required by one author upon submission of the camera-ready copy of accepted papers.

<sup>‡</sup> Not applicable to presenters and excludes banquet.

## CANCELLATION

The registration fee of delegates cancelling their registration prior to 23 July 2007 will be reimbursed except for a 20% handling charge. There will be no refund for cancellation after this date.

## REGISTRATION DESK / SYMPOSIUM OFFICE

The registration desk will be located in the reception area of the CSIR International Convention Centre. The desk will be open during the following times

Tuesday, 21 August	13:00-16:00
Wednesday, 22 August	08:30-17:10
Thursday, 23 August	08:30-17:10
Friday, 24 August	08:30-15:40

**Delegates are encouraged to register on the afternoon of Tuesday, 21 August 2007.**

## TRAVEL DESK

A travel desk will be located in the reception area of the CSIR convention centre from the 21<sup>st</sup> to the 24<sup>th</sup> of August. This desk will be staffed by **Travel & Conferencing Worldwide** who will assist delegates and accompanying persons with bookings for hotels, the shuttle service, day-tours, and pre and post symposium tours.

## LUNCH

Delegates will be served lunch at the CSIR International Convention Centre.

## SOCIAL EVENTS

A cocktail party is being organised for Tuesday, 21 August 2007.

A banquet is being organised for Thursday, 23 August 2007. This banquet will be based on an ethnic African theme and promises to be a memorable experience.

## AIRPORT TRANSFERS

The nearest international airport to Pretoria is the O.R. Tambo International Airport (formerly Johannesburg International). This airport services incoming and outgoing flights from all around the globe; as well as domestic flights. The airport is situated to the South-East of Pretoria and is approximately 50km away from the Pretoria City Centre.

A shuttle service will be made available to persons wishing to travel between the airport and Pretoria. The shuttle service can be booked together with the symposium registration and the cost structure is as follows:

Number of People	Cost
1 Person	ZAR 315.00 p.p.
2 People	ZAR 160.00 p.p.
3 - 7 People	ZAR 130.00 p.p.
8 - 12 People	ZAR 115.00 p.p.

## HOTEL TRANSFERS

Transfers to and from the conference venue have been made available by the conference organizers for those persons staying in the hotels handled by our tour operator (see Hotel accommodation). These transfers will be free for registered delegates. The transfers will only take place once in the morning and once in the afternoon. A taxi will be arranged for delegates wishing to be transferred to or from their hotels at any other time at their own cost.

## TECHNICAL TOURS

The following technical tours have been made available by the conference organizers. The technical tours will take place on the morning of Tuesday, 21 August 2007. The cost per tour is ZAR 200 per person. Only one of the visits can be attended by a delegate.

### VISIT TO PBMR FACILITY AT PELINDABA



The [Pebble Bed Modular Reactor](#) project is a major undertaking in South Africa with major stakeholders such as Eskom and the South African Government involved. This visit will take you to Pelindaba west of Pretoria to see the Helium cooling test facility. This plant contains everything except the actual nuclear reactor.

The cost for the visit is ZAR 200.

Prior requirement is knowledge of the attendee's shoe size for issuing safety shoes. Attendees are required to bring a valid passport / identity document as proof of identity to the plant.

Only groups of 10 to 44 can be accommodated.

### VISIT TO HONEYWELL / SASOL NON-LINEAR CONTROL INSTALLATION AT SASOLBURG

Sasol Polymers is a leading producer of both Low Density Polyethylene (LDPE) and Linear Low Density Polyethylene (LLDPE). On this site visit delegates will visit the Sasol Polymers Plant in Sasolburg. An outline of the process will be given, together with the use of non linear model predictive control to improve the production and agility of the plant.

The cost for the visit is ZAR 200.

Attendees are required to bring a valid passport / identity document as proof of identity to the plant.

Only one group of up to 15 persons can be accommodated.

**Persons from the polymer industries will not be allowed to attend the visit.**

# TOURISM

## PRETORIA

Judged to be the most liveable city in South Africa, Pretoria lies some 50km north of Johannesburg International Airport. As administrative and diplomatic capital, government services and the diplomatic corps of foreign representatives dominate the city, giving it a cosmopolitan flavour. The pace of the city is relaxed and pervaded by a sense of history. Church Square, around which Pretoria developed, was the main venue for trade, recreation and religious gatherings in the early days, and many buildings of historic and architectural importance have been retained. Pretoria boasts the largest residential university in South Africa, the University of Pretoria, and what is believed to be the largest correspondence university in the world, the University of South Africa (Unisa). Another attribute of Pretoria is the number of scientific institutes in and around the city, for example, the Council for Scientific and Industrial Research (CSIR) and the South African Bureau of Standards (SABS). More information on Pretoria can be found from:

<http://en.wikipedia.org/wiki/Pretoria>

[http://www.ceroi.net/reports/pretoria/gen/ab\\_pret.htm](http://www.ceroi.net/reports/pretoria/gen/ab_pret.htm) o

[http://www.southafrica.info/plan\\_trip/holiday/cities/pretoria.htm](http://www.southafrica.info/plan_trip/holiday/cities/pretoria.htm)

## SOUTH AFRICA

### Fast Facts:

**Judicial Capital:** Cape Town

**Legislative Capital:** Bloemfontein

**Administrative Capital:** Pretoria

**Independence Day:** 31 May 1961, 27 April 1994

**Time:** GMT +2 hours

**Population:** 44,800,000 (estimated 2005)

**Area:** 1,221,037 km<sup>2</sup>

**Currency:** South African Rands (ZAR)

= approx. USD\$1.00 to R7.25

= approx. GBP1.00 to R13.95

= approx Euro1.00 to R9.50

(exchange rates 10 Feb '07)

**Anthem:** Nkosi Sikelel iAfrica (God Bless Africa)

**Motto:** !ke e: /xarra //ke

**Religion:** Christian (68%), Muslim (2%), Hindu (1.5%), Tribal beliefs (28.5%).

**Parliament:** National Assembly (400 seats); Provincial counsels (90 seats)

**Administrative:** 9 Provinces

**Coastline:** 2798 km

**Rivers:** Orange, Vaal, Groot Vis, Sunday's, Berg, Breë, Limpopo, Caledon, Crocodile, Elands, Umgeni, Tugela, Molopo, Olifants, Harts

**Mountains:** Drakens, Lange, Soutpans, Outeniekwa, Hexriver, Ceder, Witte, Sneeu, Swart, Table

**Roads:** 362 099 km (73 506 km tarred)

**Rail Roads:** 22 298 km

**Ports:** Cape Town, Durban, East-London, Mossel Bay, Port Elizabeth, Richardsbaai, Saldanha

## Language

There are 11 official languages in South Africa: Afrikaans, English, Ndebele, Northern Sotho, Southern Sotho, Swazi, Tsonglo, Tswana, Venda, Xhosa and Zulu. The English-speaking visitor will have no problem while traveling through the country.

## Culture

The people of South Africa are made up of many diverse cultures and hence it is known as the Rainbow nation. It has been a difficult task to unite the people under laws that represent the traditions and beliefs of all groups. The struggle to live together peacefully still continues, but South Africans are generally optimistic about living in harmony with each other, as well as the land that is so undeniably beautiful.

## Ubuntu

We exist because we other people exist. That's the crux of the concept of Ubuntu. It is the belief that we are human only because we interact with other people. If we were to ignore the rest of humanity, and try to live in a vacuum, we'd be less than human. It's certainly not a new idea. But is the mind-set that has kept us going through all our turbulent history – and kept us working towards a society where we can live by that principle. And it is in that spirit that we invite you to come to our country, to visit us, stay with us, and play with us. Celebrate with us the adventure of living on this amazing planet – of being on our astonishing continent, and in our wonderful country. And when you leave, take a little of the magic with you. We have plenty to spare.

## Climate

South Africa is a big country just south of the tropic of Capricorn, but it is the topography and surrounding oceans that influence its climate, rather than the latitude. Although the climate varies from region to region, it is generally mild and sunny throughout the year. On the whole it is a dry country with a mean annual rainfall of 502 mm. Snowfall is limited to the highest mountain peaks. Summer temperatures average between 15 – 30 degrees C (60 – 96 degrees F) at midday. Kwa Zulu Natal has a sub-tropical climate with high humidity in summer. The southern Gauteng region has hot summers with occasional thundershowers and frosty winters, while in the eastern part of this region (known as the Lowveld) enjoys mild winters. The Cape interior and the Free State have similar weather conditions to the southern Gauteng region. The

Western Cape region has a Mediterranean climate with warm, dry summers and cold, wet winters.

Pretoria weather in August is characterized by nearly no rain and temperatures ranging from 10 degrees centigrade in the night to 24 degrees centigrade in the day. Also see the statistics from the [South African Weather Service](#).

## Currency

The unit of currency is the rand R, which is divided into 100 cents. Notes are in R200, R100, R50, R20, R10. Coins are in denominations of R5, R2, R1 and 50c, 20c, 10c and 5c.

## Exchange Rate

The exchange rate tends to be in the international tourist's favour. The continuing devaluing of the rand means that you should find most local goods very affordable, but imported and specially manufactured items tend to be very expensive. Generally, you will find that fine cuisine, wine and entertainment cost a fraction of the tariff charged by equivalent establishments elsewhere in the world.

## Banks

Banks in South Africa are generally open from 09h00 to 15h30 on weekdays and 08h30 to 11h00 on Saturdays. Most banks change all traveler's cheques in major currencies, but commission can differ greatly.

## Credit Cards

Visa, Mastercard, American Express and Diners Club are honoured by most restaurants, stores, hotels, car rental firms and other points of sale and service. Proof of identity may be requested in some instances and it is therefore useful to carry a passport or some form of photo identification at all times.

## Tipping

This is customary depending on the service and then between 10 – 15%.

## Tax

VAT of 14% is levied in South Africa. Overseas visitors taking goods out of South Africa are able to reclaim the VAT, which they paid on these goods. Reclaiming VAT is only applicable for goods that you are able to produce at the airport and not for any services whatsoever. When purchasing your products you should request a tax invoice. The shop's VAT number must appear on this invoice. VAT Reclaim Offices are found at Johannesburg, Durban and Cape Town airports.

# SECURITY

Below you can find general information on Security in South Africa.

## SAFETY TIPS

### Accommodation:

It is recommended that you:

- Do not leave your luggage unattended.
- Store valuables in the accommodation establishment's safety deposit box.
- Keep your room locked at all times, and if someone knocks check who it is before opening the door.
- Do not leave room keys lying around.
- Hand your room keys in at the front desk whenever you leave the accommodation establishment.

### Money and Travel Documents:

It is recommended that you:

- Separate your cash and credit cards and do not carry all of your cash and / or traveller's cheques with you. Instead place them in your room safe or the hotel safe.
- Do not allow strangers to assist you in your transactions at an automated teller machine (ATM). If your card appears to be stuck immediately call the help line number that can usually be found at the ATMs for assistance. Be alert and watch that no one takes the card when you turn your back.
- Report lost passports and visas as soon as possible to your country's embassy or consulate, and the SAPS.

### In The Street:

It is recommended that you:

- Try to obtain a route map before you set out and plan your route before hand.
- Keep cell phones and wallets tucked away where no one can see them and avoid ostentatious displays of expensive jewellery, cameras and other valuables.
- Carry traveller's cheques and credit cards rather than large sums of money and avoid counting money in the open.
- Try to explore together in a group and stick to well-lit busy streets, especially at night.

### On The Road:

It is recommended that you:

- Familiarise yourself with the rules of the road in South Africa. Traffic drives on the left hand side of the road.
- Plan your route and fuel consumption in advance. Note that bank credit cards (including Diners cards) are not accepted as payment for fuel.
- Call your hotel in case you get lost.
- Keep the car doors locked at all times and wind the windows up.
- Lock valuable items in the boot (trunk).
- At night, Park in well lit areas.
- Never pick up strangers.
- Go to the nearest business or petrol station to ask for assistance if you get lost. Do not stop on highways.
- Pay special attention to speed limits, road signs and road markings.
- It is an offence in South Africa for the driver of a vehicle to use any communication device while driving except when it is a hands free device.
- It is compulsory to carry translations with regard to drivers licenses in foreign languages.

**Note:** fines for a traffic violations may only be paid at a Magistrate's Court or Traffic Department or nearest police station where an official receipt will be issued. If you are issued with a citation for any traffic violation, you are not required to pay over any amount of cash directly to the Officer – this is considered bribery.

**In case of Emergency:**

If you have been victimized go to the nearest police station to repeat the matter.

**Useful Phone Numbers:**

**National Tourism Information and Safety Line: 083 123 2345**

**Emergency Number (from a cell phone): 112**

**Police Emergency Number: 10111**

**Ambulance: 10177**

**TOURISM WHITEPAPER**

The government of South Africa is committed to ensuring the safety and security of all tourists. The following policy guidelines shall apply:

- i. undertake both short and long term actions and strategies to reduce crime and violence on tourists in collaboration with relevant organisations such as the South African Police Service
- ii. provide adequate information to visitors that will help to improve their safety and security
- iii. ensure that adequate resources are devoted to providing for the safety of tourists
- iv. institute appropriate legal procedures that would facilitate speedy and effective prosecution for cases where tourists are involved
- v. coordinate cooperation among appropriate stakeholders to work together to ensure the safety and security of all tourists
- vi. carry out appropriate research concerning tourism security trends and monitor the effectiveness of safety and security measures

## HOTEL ACCOMMODATION

Competitive rates have been negotiated for hotels by our tour operator, *Travel and Conferencing Worldwide*. Below you can find general information on these hotels and they can be booked directly from the symposium registration site at <http://www.nolcos2007.org.za/registration/>

### SHERATON HOTEL ★★★★★



Situated in a residential area near the central business district of Pretoria, The Sheraton Pretoria Hotel, features 175 well-appointed hotel guest rooms with views overlooking the Union Buildings and Gardens in Pretoria. From the impressive marble lobby, to the exclusive Towers reception desk and lounge, the atmosphere of this up-market hotel is one of sophistication and elegance.

#### Rates based on bed & breakfast:

**R520.00** per person sharing maximum 2 people

**R860.00** per person in single room

### COURT CLASSIQUE ★★★★★



The gracious style of the main buildings conveys a classic air of elegance. Superbly appointed within, the Court Classique is designed for relaxation and gracious living - whether enjoying a sundowner in

the intimate lounge area, basking next to the private plunge pool or savouring fine international fare in the restaurant.

Court Classique is situated within easy walking distance of shopping centres, cinemas and restaurants and offers easy access to the region's varied attractions, from cultural sights to game parks and scenic wonders.

**Rates based on bed & breakfast:**

**ZAR 525.00** per person sharing maximum 2 people

**ZAR 930.00** per person in single room

**COURTYARD HATFIELD ★★★★★**



Built around a lovingly restored, turn of the century manor house in leafy "Embassy Row", in the suburb of Arcadia. Park-like gardens are wonderful for walks and guests are invited to sit back, relax and enjoy the grace and charm of a bygone era. The hotel is situated minutes away from shopping centres, cinema complexes, highly acclaimed restaurants, Loftus Versveld,

Pretoria city centre and the trendy suburb of Hatfield.

**Rates based on bed & breakfast:**

**ZAR 425.00** per person sharing maximum 2 people

**ZAR 755.00** per person in single room

**FARM INN ★★★★★**



The Farm Inn is a privately owned country hotel on the Eastern outskirts of Pretoria, only 20 minutes from Pretoria's Church Square, 50 minutes from Johannesburg and 45 mins from Johannesburg International Airport.

The varieties of 84 rooms are all individually decorated, all with bathroom en suite and some with an open log fireplace. Most of the rooms lead directly onto the tranquil gardens and

others have their own private veranda or balcony.

**Rates based on bed & breakfast:**

**ZAR 450.00** per person sharing maximum 2 people

**ZAR 560.00** per person in single room

**GARDEN COURT HATFIELD ★★★★★ :**



Garden Court Hatfield Hotel is situated in the eastern suburbs of Pretoria, the hotel is only 5km (3.1 miles) from the city centre and within easy reach of the N1 and the N4 highways. The Johannesburg International Airport is at a distance of 70km

(43.5 miles) away from the hotel. Garden Court Hatfield Hotel is located close to various embassies, the Securicor Loftus Rugby Stadium and the University of Pretoria in the residential suburb of Hatfield.

**Rates based on bed & breakfast:**

**ZAR 655.00** per person sharing maximum 2 people

**ZAR 990.00** per person in single room

**TOWN LODGE MENLYN ★★**



Situated in the upmarket suburb of Menlo Park with a restaurant on the property. The hotel is conveniently located 3 minutes from the Menlyn Park Shopping Centre, 10 minutes from the Pretoria CBD, very close to trendy Hatfield for restaurants and entertainment and also a short drive to Loftus Sports Stadium.

**PLEASE NOTE NO TWIN ROOMS ONLY SINGLE AND DOUBLE BEDS**

**Rates based on bed & breakfast:**

**ZAR 260.00** per person sharing maximum 2 people

**ZAR 460.00** per person in single room

**DAY TOURS**

Competitive rates have been negotiated for day tours by our tour operator, *Travel and Conferencing Worldwide*. Below you can find general information on the tours and they can be booked directly from the symposium registration site at <http://www.nolcos2007.org.za/registration/>

**LESEDI CULTURAL VISIT**

This is a multi cultural interactive experience with your host and their families from the Basotho, Ndebele, Pedi, Xhosa and Zulu nations. Share in their culture, myths, fables, beliefs, dancing and music. A must for anyone wanting to know more about Africa!

The tour includes an audio-visual presentation, visits to four homesteads, traditional dancing and singing and a buffet of the finest African cuisine.

**Pick-up times:** 10:30

**Price per person:** ZAR 750.00 (Half day)

**Price includes:** Transfer to and from Lesedi Cultural Village; entrance fees; a guided tour of the village; traditional dances and dinner.

**Price excludes:** Drinks, tips and all other extras of a personal nature

## GOLD REEF CITY

View the Johannesburg of more than a century ago at the time of the discovery of gold in South Africa! Descend into a gold mine (not working) for the underground experience by shaft, participate in a gold pour and view some spectacular tribal dancing. For the keen shopper there are also plenty of interesting little shops where curios and precious stone can be found.

**Pick-up times:** 09:00

**Price per person:** ZAR 450.00 (Half day)

**Price includes:** Transfer to and from Gold Reef City ; entrance fees and a guided tour

**Price excludes:** Meals, tips and all other extras of a personal nature

## SOWETO TOWNSHIP

Experience the vibrancy and soul of the biggest black township in South Africa and one of the biggest cities on the African continent. Catch a glimpse of the lives of its estimated 3 million residents. This popular tour includes attractions such as the Winnie Mandela and Family House Museum, the Hector Peterson Memorial site, a typical shebeen and taxi rank, a squatter camp (informal settlement), Vista University and the Chris Hani Baragwanath Hospital.

**Pick-up times:** 09:00

**Price per person:** ZAR 375.00 (Half day)

**Price includes:** Transfer to and from Soweto, the services of a qualified guide

**Price excludes:** Meals, tips and all other extras of a personal nature

## APARTHEID MUSEUM

This newly built museum next to Gold Reef City illustrates the rise and fall of apartheid. The 22 individual exhibition areas contain film footage, photographs, text panels and artifacts illustrating the events and human stories that are part of the epic saga, known as apartheid.

**Pick-up times:** 09:00

**Price per person:** ZAR 375.00 (Half day)

**Price includes:** Transfer to and from the Apartheids Museum, services of a qualified guide and entrance fee

**Price excludes:** Drinks, tips and all other extras of a personal nature

## DE WILDT CHEETAH BREEDING AND RESEARCH CENTRE

Visit the Rare and Endangered Species Captive Breeding Centre in the vicinity of Brits. Take a tour of the farm to see the cheetahs at close quarters. See wild dogs, king cheetahs, hyenas and various species of vultures. The tour coincides with feeding time, so you will be able to observe these animals feed in a natural, but controlled, habitat. Advanced booking is recommended.

**Pick-up times:** 07:30

**Price per person:** ZAR 570.00 (Half day)

**Price includes:** Transfers to and from the Breeding Station; entrance fee; the services of a qualified guide; cost of a guided tour of the farm.

**Price excludes:** Meals, tips and all other extras of a personal nature

## CRADLE OF HUMANKIND

Combination of the following: Rhino & Lion Park, Maropeng and Sterkfontein Caves.

Rhino & Lion Park - situated in a World Heritage Site, The Cradle of Humankind, this 1 000 hectare park is home to over 700 head of game including white rhino, lion, buffalo, cheetah, wild dog, hippo and crocodile. Their newly built breeding centre houses, inter alia, Bengal and Syberian tigers, jaguars and white lions.

The main building at Maropeng, called the Tumulus emulates an ancient burial mound from the front, and in stark contrast, upon exiting, a very modern iconic structure is revealed. The architecture is symbolic of the journey through the evolution of life that is represented underground in the Visitor Attraction and the entire layout of the individual facilities across the site is based on the theme of constant discovery. An original fossil display and a boat ride on an underground lake through the four life-giving elements that combined to form the earth and shape the world as it is known today, are offered. Sterkfontein Caves - a total of over 700 hominid specimens found here has made Sterkfontein the world's richest hominid site. A section of the caves is visited on an hour long guided tour and the excavation site can be viewed. A small museum displays information about significant findings, as well as general information on human and cultural evolution.

**Pick-up times:** 09:00

**Price per person:** ZAR 850.00 (Half day)

**Price includes:** Transport, services of a qualified guide, entrance fees and lunch

**Price excludes:** Drinks, tips and all other extras of a personal nature

## STERKFONTein CAVES

In 1947 a well-preserved skull of a species of early man known as "Plesianthropus trasvaalensis" was discovered. The skull became known as Mrs. Ples, dating back 2.5-million years. The total of over 700 hominid specimens found here has made Sterkfontein the world's richest hominid site. A section of the caves is visited on an hour long guided tour and the excavation site can be viewed. A small museum displays information about significant findings, as well as general information on human and cultural evolution.

**Pick-up times:** 08:30

**Price per person:** ZAR 550.00 (Half day)

**Price includes:** Transport, services of a qualified guide, entrance fees

**Price excludes:** Lunch, drinks, tips and all other extras of a personal nature

## CULLINAN DIAMOND MINE AND PRETORIA CITY

Enjoy a surface tour of the Premier Mine, opened in 1902, where the World's biggest diamond the famous Cullinan Diamond of over 3000 carats was discovered. Premier Mine has produced 255 gem diamonds of over 100 carats, and nearly a quarter of the world's gem diamonds of 400 carats and over! Visitors will see the big hole, the shaft and the diamond room where a selection of uncut diamonds and replicas of world-famous diamonds are displayed. After lunch visit the Voortrekker Monument, erected in memory of the early European settlers, Church Square, with its historical buildings in the heart of the city, Melrose House, where the Peace of Vereeniging was signed in 1092, Kruger House, the residence of the famous President Paul Kruger and the Union buildings with its spectacular terraced gardens and monuments.

**Pick-up times:** 09:00

**Price per person:** ZAR 900.00 (Full day)

**Price includes:** Transport, services of a qualified guide, entrance fees, light lunch

**Price excludes:** Drinks, tips and all other extras of a personal nature

## PILANESBERG AND SUN CITY

A combination of these two worlds allows you to experience unadorned nature and man-made splendour - African wildlife and vibrant Sun City - Africa's Kingdom of Pleasure. The Pilanesberg National Park, the fourth largest National Park in Southern Africa covers an area of 58 000 hectares and is less than 2 hours' drive from all the major centres in the Gauteng Province. Encircling this unique area are four rings of hills; a geological fascinating alkaline complex produced by volcanic action some 1,2 billion years ago. The Park boasts healthy populations of lion, leopard, black and white rhino, elephant and buffalo, **Africa's Big Five**. There is a wide variety of rare and common species. A few of the endemic species that may be seen here are the nocturnal brown hyena, the fleet-footed cheetah, the majestic sable, as well as giraffe,

springbok, zebra, hippo and crocodile. Bird-watching is excellent with over 360 species recorded.

**Pick-up times:** 08:00

**Departure time:** 16:00 (from Pilanesberg)

**Price per person:** ZAR 900.00 (Full day)

**Price includes:** Transport, services of a qualified guide, entrance fees, lunch

**Price excludes:** Drinks, tips and all other extras of a personal nature

## PRE AND POST TOURS

Competitive rates have been negotiated for pre and post symposium tours by our tour operator, *Travel and Conferencing Worldwide*. Below you can find general information on the tours and they can be booked directly from the symposium registration site at <http://www.nolcos2007.org.za/registration/>

### KRUGER NATIONAL PARK

#### 3 Days & 2 Nights

**A1. PRE TOUR – 19 to 21 August 2007**

**B1. POST TOUR – 25 to 27 August 2007**

#### **Day 1 Pretoria - Kruger National Park**

(- - D) Depart early morning from your hotel, for the world-renowned Kruger National Park which offers a wildlife experience that ranks with the best in Africa. You travel over the rolling hills of the Mpumalanga Highveld via Witbank, Middelburg and Nelspruit and enter the Park at the nearest gate. Today's program includes a late afternoon game drive in your touring vehicle with your tour guide. Upon your return you will enjoy dinner in the restaurant at the rest camp.

**Overnight: Rest Camp**

#### **Day 2 Kruger National Park**

(B - D) The morning commences with an early morning game drive on an open vehicle, returning in time for a well-deserved breakfast. This national park of nearly 2 million hectares was established in 1898 to protect the wildlife of the South African Lowveld. The Kruger Park is unrivalled in the diversity

of its life forms and a world leader in advanced environmental management techniques and policies. Therefore the remainder of your day is spent in search of the BIGFIVE - elephant, rhino, lion, buffalo and leopard. Kruger is also home to an impressive number of species: 336 trees, 49 fish, 34 amphibians, 114 reptiles, 507 birds and 147 mammals. In the afternoon join your ranger for a sunset drive in an open vehicle. Upon your return you will enjoy dinner in the restaurant at the rest camp.  
**Overnight: Rest Camp**

### **Day 3 Kruger Park – Pretoria/Johannesburg**

(B - -) After an early breakfast you will depart for the scenic panoramic route of Eastern Mpumalanga. Travel via Kowyns Pass to the village of Graskop. Visit God's Window, a cleft in the edge of the escarpment which provides a grand view down into the Lowveld (weather permitting). At Lisbon Falls you will be able to stretch your legs, then on to Bourke's Luck Potholes and the Blyde River Canyon. Late afternoon arrival at your hotel or drop-off at OR Tambo International Airport (Johannesburg).

**Tour price per person sharing: ZAR 4495.00**

**Tour price per single person: ZAR 5145.00**

**(A minimum of 4 passengers required.)**

**The price includes:** Accommodation on dinner (D), bed and breakfast basis (B)

Entrance fees where applicable, Transport in air-conditioned vehicle,  
Registered tourist guide, 2 x game drives on an open vehicle

**The price excludes:** Lunch, drinks, tips, portage and all extras of personal nature

#### **Suggestions:**

Bring along your cameras and binoculars. Light informal clothing required. The days will be warm and the evenings can be very cold, suggest you bring a light jacket / jersey for the game drives. No walking shoes required. Anti malaria tablets are recommended when visiting this area. Passengers should exchange foreign currency prior to departure as it is sometimes difficult to do so en-route.

## **KRUGER NATIONAL PARK TOUR & PRIVATE GAME LODGE**

**4 Days and 3 Nights**

**A2. PRE TOUR – 18 to 21 August 2007**

## **B2. POST TOUR – 25 to 28 August 2007**

### **Day 1: Pretoria - Kruger National Park**

(- - D) Depart early morning from your hotel, for the world-renowned Kruger National Park which offers a wildlife experience that ranks with the best in Africa. You travel over the rolling hills of the Mpumalanga Highveld via Witbank, Middelburg, Nelspruit and enter the Park at the nearest gate. This national park of nearly 2 million hectares was established in 1898 to protect the wildlife of the South African Lowveld. Today's program includes a late afternoon game drive in your touring vehicle with your tour guide. Upon your return you will enjoy dinner in the restaurant at the rest camp.

**Overnight: Rest Camp**

### **Day 2: Kruger National Park - Kapama River Lodge**

(BLD) The morning commences with an early morning game drive on an open vehicle, returning in time for a well-deserved breakfast. After breakfast leave the Kruger National Park for Kapama Game Lodge situated in a nearby Game Reserve adjacent to the Kruger Park. Arriving in time for lunch. In the afternoon you will be taken on a sunset game drive in an open vehicle under the guidance of a qualified game ranger. Return to the Lodge in time for dinner under the African stars in the traditional boma.

**Overnight: Kapama River Lodge**

### **Day 3: Kapama River Lodge**

(BLD) The morning commences with an early morning game drive in an open vehicle under the guidance of a qualified game ranger. The remainder of the day is at leisure at the Lodge with time to relax at the pool or undertake game walks. In the late afternoon/early evening you will again be taken on a game drive in an open vehicle. Return to the Lodge in time for dinner under the African stars in the traditional boma.

**Overnight: Kapama River Lodge**

### **Day 4: Kapama River Lodge – Pretoria/Johannesburg**

(B - -) After an early breakfast you will depart for the scenic panoramic route of Eastern Mpumalanga. Visit God's Window, a cleft in the edge of the escarpment which provides a grand view down into the Lowveld (weather permitting). At Lisbon Falls you will be able stretch your legs, then on to Bourke's Luck Potholes and the Blyde River Canyon. Late afternoon arrival at your hotel or drop-off at OR Tambo International Airport (Johannesburg).

**Tour price per person sharing:**

ZAR 7895.00

**Tour price per single person:**

ZAR 10475.00

**The price includes:**

- Accommodation on dinner (D)
- bed and breakfast (B) basis
- 2 x lunches (L),

- Entrance fees where applicable
- 1 x early morning game drive on an open vehicle in the Kruger Park
- 3 x game drives on open vehicles at Private Lodge
- Air-conditioned transport
- Registered tourist guide

**The price excludes:** Meals not mentioned, drinks, tips, portage and all extras of a personal nature

**Suggestions:**

Anti malaria tablets are recommended when visiting this area. Bring along your cameras, video cameras and binoculars. Light informal clothing required. The days will be warm but the evenings can be cold, suggest you bring a jacket / jersey for the game drives especially during our winter months.

No walking shoes required. Passengers should exchange foreign currency prior to departure as it is sometimes difficult to do so en-route.

**VICTORIA FALLS (ZAMBIA) TOUR**

**3 Days and 2 Nights**

**A3. PRE TOUR – 19 to 21 August 2007**

**B3. POST TOUR – 25 to 27 August 2007**

**Day 1: JOHANNESBURG – LIVINGSTONE**

(---) Depart from OR Tambo International Airport (Johannesburg) for Livingstone Airport - Zambia. Upon arrival you are welcomed and transferred to your hotel on the Zambian bank of the Zambezi River. After check-in, time to freshen up and laze at the pool, soaking in the balmy heat of the African sun. Meet at 16h00 at the Entertain Centre where you will be transported to the river for your afternoon Sundowner Cruise on the green expanse of the Zambezi above the Falls with its brooding shoreline forest and noisy hippos, a warm and unforgettable experience of a vibrant African evening. Local drinks & snacks are included.

**Overnight: The Royal Livingstone Hotel 5\* or Zambezi Sun 3\***

**Day 2: ZAMBIA – VIC FALLS**

(B--) Today is at leisure to join any of the various activities in Livingstone or Victoria Falls e.g. Vic Falls, African Spectacular, Water Rafting, Tandem Kayaking, Full or Half day canoeing, Jet boat rides or even an Elephant Back Safari.

## **Overnight: The Royal Livingstone Hotel 5\* or Zambezi Sun Hotel 3\***

### **Day 3: LIVINGSTONE – JOHANNESBURG**

(B--)  
Enjoy a relaxing morning before your return transfer to the Livingstone Airport for your return flight to Johannesburg. At OR Tambo International Airport (Johannesburg) you will be met and transferred to your hotel (additional cost) or continue with your flight home.

#### **The Royal Livingstone 5\***

Price per person sharing: ZAR 6610.00  
Price for a single person: ZAR 9880.00

#### **Zambezi Sun Hotel 3\***

Price per person sharing: ZAR 4640.00  
Price for a single person: ZAR 6190.00

**\*\*\* Prices quoted are subject to change due to currency fluctuation. \*\*\*\***

**The price includes:** Accommodation on bed and breakfast basis Sundowner cruise (local drinks and snacks included) Unlimited access to see the Vic Falls Return Airfare from Johannesburg Johannesburg airport tax and airline insurance tax

**The price excludes:** Drinks and all extras of a personal nature USD25 departure tax Livingstone Airport

#### **Suggestions:**

Bring along your cameras and binoculars. Light informal clothing required. The days will be warm and the evenings can be very cold, suggest you bring a light jacket / jersey for the sun set cruise. Walking shoes required. Anti malaria tablets are recommended when visiting this area.

## **GARDEN ROUTE TOUR**

### **4 Days & 3 Nights**

**A4. PRE TOUR – 18 to 21 August 2007**

**B4. POST TOUR – 25 to 28 August 2007**

#### **DAY 1 CAPE TOWN – KNYSNA**

(--D)  
We depart from Cape Town and travel on the National highway via Sir Lowry's Pass to Mossel Bay (this trip takes approximately 4 hours). We visit the Diaz Maritime Museum where a replica of the Caravel, used by the very first seafarer Bartholomew Diaz around the Cape in 1488m, can be seen. We continue via George and Wilderness to the Lake districts of Knysna.

**Overnight: Knysna Quays Protea Hotel or similar**

#### **DAY 2 KNYSNA – GEORGE**

(B-D)  
This morning you enjoy a hearty breakfast, travel west to George via Plettenberg Bay, Knysna and Wilderness. At Knysna you undertake a cruise

on the lagoon and view, inter alia, the Knysna Heads with splendid views of the sea on the one side and on the other the town of Knysna and the forests and mountains beyond. The name is of Khoenkhoen origin and means “fern leaves”. You then travel through the lake district of the Wilderness and then by steam train (the Choo Choo) to George. Arrive late afternoon at your hotel. The hotel was named after King George the IV of England.

**Overnight: Protea King George hotel or similar**

**DAY 3 GEORGE - OUTDSHOORN**

(B-D) This morning you depart for Oudtshoorn, the ostrich capital of South Africa, via the Outeniqua Mountain pass. We visit the world famous Cango Caves to view the amazing stalactite and stalagmite formations. You visit the Hoopers High Gate Ostrich farm which is a commercial and show farm. You learn more about their breeding program and for the daring there will be an opportunity to ride on an ostrich. Lunch will be at the Ostrich farm. Return late afternoon to your hotel.

**Overnight: Protea King George hotel or similar**

**DAY 4 GEORGE – CAPE TOWN**

(B--) Enjoy breakfast then travel overland with your guide to Cape Town or book a flight from George to Johannesburg.

**Price per person sharing: ZAR 5800.00**

**Price per single person: ZAR 6450.00**

**(A minimum of 4 passengers required.)**

- Accommodation on dinner (D)
- bed and breakfast (B) basis
- Registered tourist guide.
- All entrance fees where applicable.
- Transport in air-conditioned vehicle.

**The price includes:**

**The price excludes:** Lunch, drinks, all extras of personal nature, tips and gratuities. All international and domestic flights are excluded.

**Suggestions:**

Bring along your cameras and binoculars. Light informal clothing required. The days will be warm and the evenings can be very cold, suggest you bring a light jacket / jersey. Walking shoes required.

## **CAPE TOWN AND ENVIRONS TOUR**

**3 Days and 2 Nights**

**A5. PRE TOUR – 19 to 21 August 2007**

**B5. POST TOUR – 25 to 27 August 2007**

**DAY 1 CAPE TOWN**

(--D) The morning will be at leisure. You depart at 13:00 for a tour of the Winelands, visiting some of the prestigious wine estates and having an opportunity to sample some of South Africa's best. You return to the hotel in the late afternoon. The evening is at leisure.

**Overnight: Portswood Hotel 4\* or similar**

**DAY 2 CAPE TOWN**

(B-D) Full day in Cape Town, the legislative capital of South Africa. Weather permitting an ascent of Table Mountain (weather permitting) for the most spectacular view on earth and then a trip along the tortuous bends of the spectacularly scenic Chapman's Peak Drive, for an unforgettable view of the bay and picturesque village of Hout Bay to the Cape of Good Hope Nature Reserve and Cape Point for a memorable vista of the spot where the Atlantic and Indian Oceans meet. Return to Cape Town via Simonstown with a stop at Boulders to visit the penguin colony. Return to the hotel in the late afternoon.

**Overnight: Portswood Hotel 4\* or similar**

**DAY 3 CAPE TOWN**

(B--) The morning is at leisure. Possibilities are visits to the Castle of Good Hope completed in 1679; the Company Gardens with its emerald lawns, graceful fountain and exotic shrubs and plants; Green Market Square, a cobbled, shade-dappled animated square with stalls laden with craftwork, leather goods and costume jeweler and the Victoria and Alfred Waterfront, a vibrant thoroughly cosmopolitan waterfront development offering theatres, cinemas, restaurants, fast-food outlets and a variety of specialty shops. In the late afternoon you are transferred to Cape Town International Airport for your flight to Johannesburg or home or back to your hotel for an extended stay in South Africa.

**Price per person sharing: ZAR 4400.00**

**Price per single person: ZAR 5395.00**

**The price includes:**

- Accommodation on dinner (D)
- bed and breakfast (B) basis
- Registered Tourist Guide
- All entrance fees as per the program
- Transport in air-conditioned vehicle

**The price excludes:**

Lunch, drinks, all extras of personal nature, tips and gratuities All international and domestic flights

**Suggestions:**

Bring along your cameras and binoculars. Light informal clothing required. The days will be warm and the evenings can be very cold, suggest you bring a light jacket / jersey.

## SHAKALAND AND HLUHLUWE GAME RESERVE

**A6. PRE TOUR – 18 to 21 August 2007**

**B6. POST TOUR – 25 to 28 August 2007**

**DAY 1: DURBAN - HLUHLUWE GAME RESERVE**

(- - D) Depart Durban via the north coast of KwaZulu-Natal. Arrive in the afternoon at the Hluhluwe Game Reserve, home to a large population of Black and White Rhino. Enjoy an afternoon game drive in search of the “ Big Five “ – lion, leopard, buffalo, rhino and elephant.

**Overnight: Hilltop Rest Camp.**

**DAY 2: HLUHLUWE GAME RESERVE:**

(B – D) Full day game viewing in the Hluhluwe Game Reserve. Time will also be spent enjoying the incredible variety of flora and fauna protected within the park.

**Overnight: Hilltop Rest Camp.**

**DAY 3: HLUHLUWE GAME RESERVE – SHAKALAND**

(B – D) Depart after morning game drive for St Lucia Lake and enjoy a boat cruise on the St Lucia Lake (if operating). In the afternoon proceed to Shakaland Cultural Village for the afternoon Zulu cultural experience. Enjoy traditional dancing followed by dinner.

**Overnight: Shakaland in the bee hive huts.**

**DAY 4: SHAKALAND – DURBAN**

(B - -) Enjoy breakfast followed by the morning program on cultural life, stick fighting and spear making. Depart midmorning for Durban, to fly either to Johannesburg or home.

**Price per person sharing: ZAR 5970.00**

**Price per single: ZAR 6990.00**

**(A minimum of 4 passengers required.)**

**The price includes:**

- Accommodation on dinner (D)
- bed and breakfast (B) basis
- Entrance fees where applicable
- 4 x game drives on open vehicles at Hluhluwe Game Reserve
- Air-conditioned transport
- Registered tourist guide

**The price excludes:**

Meals not mentioned, drinks, tips, portage and all extras of a personal nature

**Suggestions:**

Bring along your cameras and binoculars. Light informal clothing required. The days will be warm and the evenings can be very cold, suggest you bring a light jacket / jersey for the game drives. No walking shoes required. Anti malaria tablets are recommended when visiting this area.

## TERMS AND CONDITIONS

**1. Transportation:**

Transport is provided in air-conditioned vehicles as per request at all times. We reserve the right to utilize sedan vehicles when micro-buses are not justified.

**2. Reservations & Cancellation Policy:**

A deposit of 50% of the total tour price per person is payable at the time of making the reservation. The final payment is due at least 07 days before commencement of the tour. We reserve the right to cancel any reservation made for which the total payment has not been made by the due date in which event the deposit will be forfeited. The final payment will still be outstanding and due by the client. Cancellation fees:

30 days or more before start of tour: 0 %  
21 - 29 days before start of tour: 25 %  
14 - 20 days before start of tour: 50 %  
07 - 13 days before start of tour: 75 %  
less than 07 days before start or tour: 100 %

**3. Insurance:**

To be taken out by the potential client: Loss against stolen/lost goods, personal accident coverage. Loss of deposit through cancellation or full payment.

**4. Visa's:**

Please make sure that you have at least two blank pages in your passport before travelling. Enquire directly at your local travel agent or the South African Embassy in your country if you need a visa to travel to South Africa.

**5. Tour Guides:**

Guides appointed by Travel & Conferencing Worldwide will be taking control of all tours and their lawful requests must be obliged. All guides used are THETA registered.

**6. Responsibility Clause:**

Travel & Conferencing Worldwide and it's associated companies and agents/guides will not be held responsible for any injury, loss or damage as well as accidents, delays or any other happening in the event of the tour that is out of normal control of the operator. Delays in flights will also not be regarded as a fault of the tour operator.

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