2nd WSEAS Multiconference on Applied and Theoretical Mathematics

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PROGRAM

Cairns, Australia
Dec. 17-23, 2001

Dear Participants,

We are greatly honored to have you with us once again in the 2nd WSEAS Multiconference on Applied and Theoretical Mathematics. This event was organized for first time last year in Vravrona, Greece and will be organized again next year (2002) in Miedzyzdroje, Poland. Taking this opportunity, we would like to express our appreciation to you and wish you to enjoy the scientific and cultural part of the meeting.

In your conference bag, you can find the following material:

- Conference Proceedings (CD-ROM)
- A volume of WSEAS-Press International Editions with your papers
- Certification of attendance
- A card with season's greetings from WSEAS Staff
- Notebook and pen
- Name Card
- A coupon for our Welcome Cocktail and Banquet

Thank you very much.

See you again, next year, in Miedzyzdroje, Poland in the 3rd WSEAS Multiconference on Applied and Theoretical Mathematics.

Vitaliy V. Kluev
Nikos E. Mastorakis
Conferences Co-Chairmen

Program of the 2nd WSEAS Multiconference on Applied and Theoretical Mathematics

Cairns, Australia
Dec. 17-23, 2001

Monday, December 17, 2001

PLENARY LECTURE 1: 9:00-10:00

Holistic discretisation illuminates and enhances the numerical modelling of differential equations

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I give an overview of some recent developments in using modern dynamical systems theory to derive numerical discretisations of dissipative partial differential equations. The approach provides a systematic way of deriving robust and accurate numerical models. This arises because the method automatically parametrises subgrid scale processes. Good performance at finite grid size should greatly decrease the cost of numerical simulations. Further, it is straightforward both to incorporate boundary conditions on the edges of the domain and to provide initial conditions for forecasting. By making minor modifications of computer algebra programs others may readily apply these methods to their own numerical approximation problems.

Time: 10:00-11:00
Session 01: Numerical Analysis and Numerical Methods I
Chair: Brian Jefferies, Yiming Li
All the papers of this session are published in the pages 7 – 24 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings.

Domain decomposition for a singularly perturbed problem with parabolic layers
Igor Boglaev, Vic Duoba

Applications Wavelets in Industry - Patenting Trends
Mei Kobayashi

Algebraic condition for integrable numerical algorithms
Toshiaki Itoh

11:00-11:30: Coffee-Break

Time: 11:30-13:30
Session 02: Numerical Analysis and Numerical Methods II
Chair: Toshiaki Itoh, Yoshihiro Tanada

Monotone Iterative Method and Adaptive Finite Volume Method for Parallel Numerical Simulation of Submicron MOSFET Devices
Yiming Li, Cheng-Kai Chen, Pu Chen

A Monotone Iterative Method for Semiconductor Device Drift Diffusion Equations
Yiming Li

Models Encompassing Hydraulic Jumps in Radial Flows Over a Horizontal Plate
A. J. Roberts, D. V. Strunin

An automatic integration of infinite range integrals involving Bessel functions
Feng Su, Takemitsu Hasegawa, Avram Sidi

Numerical Approximating the Two Component Becker-Doring Equations
Ali Reza Soheili

Time: 15:30-17:00
Session 03: Linear Algebra and Differential Equations I
Chair: Tony Roberts, Takemitsu Hasegawa

Evaluation of ZCZ sets on inter-cell interference for cellular AS-CDMA systems
Shinya Matsufuji, Kenji Takatsukasa, Noriyoshi Kuroyanagi, Suehiro Naoki

Spectral Theory for Systems of Matrices
Brian Jefferies

Periodic Sequences Derived from Self-Orthogonal Finite-Length Sequences
Yoshihiro Tanada

17:00-17:30: Coffee-Break

Time: 17:30-19:30
Session 04: Linear Algebra and Differential Equations II
Chair: Kiyoshi Tanaka, Abolghasem Bozorgnia

All the papers of this session are published in the pages 66 – 89 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings.

Matrix computations for detecting and visualizing outlier clusters
Masaki Aono, Hironori Takeuchi, Hikaru Samukawa, Mei Kobayashi

Wavelet based noise detection and filtering
D. S. Bormane, T. R. Sontakke

Exact controllability of Klein-Gordon systems with a time-varying parameter
Iwan Pranoto

Holistic discretisation illuminates and enhances the numerical modelling of differential equations
A. J. Roberts

20:00 Welcome Cocktail

Tuesday, December 18, 2001

PLENARY LECTURE 2: 9:00-10:00

OASIS: Text Search Using High-Speed Networks

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Presently domain specific search engines are becoming popular because they offer greater accuracy, when compared to general-purpose search engines. The OASIS system offers a promising solution of a distributed domain specific search. The architecture of the system will be presented here. Advantages and disadvantages of the OASIS approach will then be discussed, and the improved model of OASIS will be explained. The main thrust of this approach is to connect OASIS servers with a high-speed network based on ATM technology. The new method for collecting domain specific documents from the Internet is then presented. One of important features to be discussed is OASIS' support of multiple languages. This system participated in the NTCIR Workshop. Results of NTCIR experiments on Japanese text retrieval will also be reported.

Time: 10:00-11:00
Session 05: Control and Intelligent Systems
Chair: G. Lambert-Torres, Vitaliy Kluev
All the papers of this session are published in the pages 90 – 99 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the last one which can be found at the same book from page 307 – 312.

A Complex Lyapunov Theory-based Adaptive Algorithm For Complex Signal Processing
Kah Phooi Seng, Zhihong Man, H. R. Wu

Binary distillation control by decoupling controller
Sutanto Hadisupadmo, R.J.Widodo, Tatang Hernas Soerawijaya, Harijono A. Tjokronegoro

Intelligent Multi-Agent System for Power System Restoration
G. Lambert-Torres, L. E. Borges da Silva, M. A. B. Sobral

11:00-11:30: Coffee-Break

Time: 11:30-13:00
Session 06: Algorithms and Graph Theory
Chair: G. Lambert-Torres, Vitaliy Kluev
All the papers of this session are published in the pages 105 – 122 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings.

A New Analysis of the AVL Tree Insertion Algorithm
Ningping Sun, Ryozo Nakamura, Wenling Sun, Hongbing Zhu, Akio Tada

An Analysis of Two Open Problems of AVL Tree Insertion Algorithm
Ningping Sun, Ryozo Nakamura, Wenling Sun, Akio Tada

On the independent set of de Bruijn graphs
Yosuke Kikuchi, Yukio Shibata

Time: 15:00-17:00
Session 07: Communications, Distance Learning
Chair: Rohan De Silva, Ivan Ganchev
All the papers of this session are published in the pages 255 – 268 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the last one which can be found at the same book from page 274 – 276.

An efficient satellite CAS using password-based protocol
Youngsoo Kim, Jungchan Na, Seungwon Sohn

A secure method for transferring active packets
Youngsoo Kim, Jungchan Na, Seungwon Sohn

Optimising Student Learning Through Effective Use of Technology
Julie Saunders, Bill Blyth

The security system for response within the border router of the local network that the attacker belongs to
Minho Han, Jungchan Na, Sungwon Sohn

17:00-17:30: Coffee-Break

Time: 17:30-19:30

Session 08: Algorithms and Linear Systems
Chair: Amr Elmasry, Ivan Ganchev

Construction of alpha-valuations of special classes of 2-regular graphs
Kourosh Eshghi, Michael Carter

On the problem of distributing objects in cells with different capacities
Ahmad Khonsari, Hamid Sarbazi-Azad

How bad a pairing heap might be
Amr Elmasry

An Algebraic Analysis of Linear Hybrid Systems
Zhenyu Yang

20:30 Banquet

Wednesday, December 19, 2001

Time: 8:30-10:30
Session 09: Algorithms Theory and Modelling
Chair: Yiming Li, Toshiaki Itoh

A fast scheduling algorithm in AND-OR graphs
George M. Adelson-Velsky, Alexander Gelbukh, Eugene Levner

Modification and Efficient Implementation of the SKHNE Algorithm for Adaptive Data Protection
Mairtin O' Droma, Ivan Ganchev

Modelling and analysis of push caching
Rohan De Silva

A new proof for the sequential access theorem for splay trees
Amr Elmasry

10:30-11:00: Coffee-Break

Time: 11:00-12:30
Session 10: Optimization Theory and Optimization Methods
Chair: Hernan Aguirre
All the papers of this session are published in the pages 192 – 207 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the last two which will be published in a future volume of WSEAS.

An improved nearest neighbour search algorithm based on LAESA
Kazuaki Yamaguchi, Yoichi Kondo

Neural-MOS Threshold Gate as a Way to Design On-Chip Learning Neuron Structures
Rafail Lashevsky

Multi-level Halftone Image Generation with Genetic Algorithms
Tomoya Umemura, Hernan Aguirre, Kiyoshi Tanaka

Combined Methods for Approximating Hankel Matrix
Suliman Al-Homidan

Protein folding by hydration aided search of minimum energy
Jarmo T. Alander

Time: 15:30-17:00
Session 11: Probability, Statistics, Operational Research I
Chair: Tony Roberts, Hesham Nasif
All the papers of this session are published in the pages 208 – 219 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the first one which can be found at the same book from page 37 – 42.

The strong law of large numbers for pairwise negatively dependent random variables
Hamid Reza Nili Sani, Abolghasem Bozorgnia

The Q method for the Second Order Cone Programming
Farid Alizadeh Yu Xia

Estimating 3D fibre process anisotropy
Marcela Hlawiczkova, Petr Ponizil, Ivan Saxl

17:00-17:30: Coffee-Break

Time: 17:30-19:30
Session 12: Algebra and Operators Theory
Chair: Abolghasem Bozorgnia

All the papers of this session are published in the pages 232 – 254 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the last one which will be published in a future volume of WSEAS.

Quantum cohomology ring for hermitian symmetric spaces of type DIII
Yasunori Nishimori, Yoshihiro Ohnita

Multilattices via Multisemilattices
J. Martvnez, G. Gutiurrez, I. P. De Guzman, P. Cordero

Regular Filter Space
Nandita Rath

Operators on Lorentz Sequence Space II
Rahmatollah Lashkaripour

Thursday, December 20, 2001

Time: 8:30-10:00
Session 13: Fuzzy Systems and Adaptive Filtering
Chair: Takemitsu Hasegawa, Hesham Nasif

All the papers of this session are published in the pages 123 – 138 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings.

Stability analysis of discrete time fuzzy systems based on piecewise Lyapunov functions
Louis Wang, Gang Feng

Controller synthesis of discrete time fuzzy systems based on piecewise Lyapunov functions
Louis Wang, Gang Feng

Discrete Sliding-Mode Adaptive Algorithm For Adaptive Filtering
Kah Phooi Seng, Zhihong Man, H. R. Wu

10:00-10:30: Coffee-Break

Time: 10:30-13:00
Session 14: Education, Software Engineering and Computer Networks
Chair: Vitaliy Kluev, Hideyuki Torii
All the papers of this session are published in the pages 269 – 306 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings.

Innovations in On-Line Mathematics Education
Graham Clarke

A Geometry Curriculum Featuring the Use of Dynamic Computer Software
Zhonghong Jiang, Azita Manouchehri, Mary Enderson

Applied programming on web-based environment
Alexander Vazhenin, Dmitry Vazhenin

Source Selection in a Distributed Search System
Vitaliy Kluev

An experimental study on the use of computers in schools
Alfredo Mendez, Carmen Ortiz

A comparison of two teaching methods
Alfredo Mendez, Nieves Garcia

Time: 15:30-17:00
Session 15: Intelligent Systems – Computational Techniques
Chair: Yiming Li, Rohan De Silva
All the papers of this session are published in the pages 313 – 325 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the last one which can be found at the same book from page 100 – 104.

A Novel Approach for Radionuclide Transport in Inhomogeneous Crystalline Rocks using Wavelet Galerkin Method
Hesham Nasif, Atsushi Neyama, Hiroyuki Umeki, Atsuyuki Suzuki

Quantitative and Qualitative analysis of wavelet Galerkin Approach to solve radionuclide transport in inhomogeneous crystalline rocks
Atsushi Neyama, Hesham Nasif, Hiroyuki Umeki, Atsuyuki Suzuki

New method for constructing polyphase ZCZ sequence sets
Hideyuki Torii, Makoto Nakamura, Naoki Suehiro

17:00-17:30: Coffee-Break

Time: 17:30-19:30
Session 16: Probability, Statistics, Operational Research II
Chair: Abolghasem Bozorgnia

All the papers of this session are published in the pages 220 – 231 of the "Topics in Applied and Theoretical Mathematics and Computer Science", WSEAS Press Post-Conference Book as well as in the CD-ROM Proceedings, except the two last ones which will be published in a future volume of WSEAS

Simulation Studies of Waiting Time Approximation for the Multi Priority Dual Queue (MPDQ) with Finite Waiting Room and Non-Preemptive Scheduling
Anthony Bedford, Panlop Zeephongsekul

Simulation Studies on the Performance Characteristics of Multi Priority Dual Queue (MPDQ) with Finite Waiting Room and Non-Preemptive Scheduling
Anthony Bedford, Panlop Zeephongsekul

Convergence of Weighted Sums of Random Variables
Mohammad- Amini Dehak, Abolghasem Bozorgnia

sub-Gaussian techniques in proving some strong limit theorems
Abolghasem Bozorgnia, Mohammad Amini Dehak