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Welcome from the Co-Chairs

Welcome to the International Workshop on Frontiers in Applied Computational Electromagnetics - FACE 2006. The Computational Electromagnetics Research Laboratory at the University of Victoria will host a stimulating two-day program of scientific, cultural and social events for the participants and their guests. The technical program is co-sponsored by the IEEE Microwave Theory and Techniques (MTT) and the Antenna and Propagation (APS) Societies and features presentations by leading international experts in Computational Electromagnetics, Microwave R&D, Modeling and Optimization.

The non-technical highlights of the event will be a recital for two pianos – guest artists Helmut Brauss and Diana Lawton will perform works by Mozart and Saint-Saëns – followed by a reception and banquet at the University Club.

Victoria, the capital of British Columbia on the southern tip of beautiful Vancouver Island, is one of the most popular tourist attractions in the world, nicknamed "The City of Gardens". We hope you will enjoy not only our Workshop program but also our magnificent North-West Pacific environment and the generous hospitality of its inhabitants.

Poman P. M. So and Jens Bornemann
Co-Chairs
FACE 2006

Scope of the Conference

The Computational Electromagnetics Research Laboratory at the University of Victoria is pleased to host, and invites you to attend a special workshop on research in applied computational electromagnetics, FACE 2006. The main objectives of this workshop are (1) to bring together the researchers and practitioners from around the globe to exchange new ideas and application experiences in applied electromagnetic modeling, (2) to stimulate the development of algorithms and their applications to realistic and challenging problems, and (3) to explore the feasibility of building an open source computational electromagnetics system. The workshop will consist of invited special talks, contributed presentations and poster sessions. English will be the working language and selected papers are planned to be published in a special issue of the International Journal of Numerical Modeling.

Victoria British Columbia Canada

Victoria, British Columbia is always in season! Victoria has the mildest climate in Canada, and is a place so green all year that flowers fall out of the sky and even the lamp posts bloom. It is no wonder that it is called The Garden City! The wild beauty of the Pacific coast and the adventure of the great outdoors are within the city limits and ocean and mountain vistas will follow you wherever you go. The Garden City is a year-round tourism destination that offers a friendly, safe haven for all visitors. Getting here is very easy, and, once here, you will feel a million miles away. With a clean environment and charming ambience, it is no surprise that Victoria, BC is one of the world's favorite destinations. For additional information about Victoria, please visit www.cerl.ece.uvic.ca/face_2006.htm.

Workshop Co-Chairs

Prof. P.P.M. So, University of Victoria, CANADA
Prof. J. Bornemann, University of Victoria, CANADA

Workshop Secretary

Ms. D. Shannon, University of Victoria, CANADA

International Steering Committee

Prof. J.W. Bandler, McMaster University, CANADA
Prof. P. Russer, Tech.University of Munich, GERMANY
Prof. R. Sorrentino, University of Perugia, ITALY
Prof. R. Vahldieck, ETH Zürich, SWITZERLAND
Prof. C. Christopoulos, University of Nottingham, U.K.
Prof. T. Itoh, U.C.L.A., U.S.A.
Program

Monday June 19

08:30 – 09:00 Registration — Lobby, David Strong Building
09:00 – 10:30 Session 1 — TLM Modelling and Analysis (W.J.R. Hoefer)
10:30 – 10:45 Coffee Break
10:45 – 12:15 Session 2 — Hybrid Techniques (R. Vahldieck)
12:15 – 13:45 Lunch
13:45 – 15:15 Session 3 — Optimization Techniques for CEM (J. Bandler)
15:15 – 15:30 Coffee Break
15:30 – 17:00 Special Presentation, W.J.R. Hoefer
   In Search for the Intangible — 40 Years of Research in Electromagnetics
   David F. Strong Building, Matthews/McQueen Theatre (DSBC 103)
17:00 – 18:00 Break
18:00 – 19:00 Two-Piano Recital, Dr. Helmut Brauss and Ms. Diana Lawton
   Recital at Philip T. Young Recital Hall
19:00 – 19:30 Reception at University Club
19:30 – 21:30 Banquet

Tuesday June 20

09:00 – 10:30 Session 4 — Modelling of Microwave Components (J. Bornemann)
10:30 – 10:45 Coffee Break
10:45 – 12:15 Session 5 — TLM Modelling and Analysis (P. Russer)
12:15 – 13:45 Lunch
13:45 – 15:30 Session 6 — Modelling of Antenna Structures (J. Uher / J. Bornemann)
15:30 – 15:45 Coffee Break
15:45 – 17:00 Open Discussions — Approaches for Developing an Open-Source CEM Package (P. So)
### Monday June 19

#### Session 1  TLM Modelling and Analysis
*Chairman: Prof. W.J.R. Hoefer*

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 – 09:15</td>
<td>MEFiSTo-Based Microwave Filter Design Exploiting Space Mapping</td>
<td>Ahmed S. Mohamed, John W. Bandler and Mohamed H. Bakr</td>
</tr>
<tr>
<td>09:15 – 09:30</td>
<td>S-parameter Extraction from the Time Domain Response of Devices with Different Arbitrary Port Impedances</td>
<td>Huilian Du, Dan Goreea, Poman P.M. So and Wolfgang J. R. Hoefer</td>
</tr>
<tr>
<td>09:30 – 09:45</td>
<td>Numerical Investigation of Traveling Wave Photodetectors under High Power Illumination</td>
<td>Damir Pasalic and Rudiger VahlDieck</td>
</tr>
<tr>
<td>09:45 – 10:00</td>
<td>Adjoint-Based TLM Sensitivities Exploiting The Hybrid Symmetrical Condensed Node</td>
<td>Payam Abolghasem, Mohamed H. Bakr and Natalia K. Nikolova</td>
</tr>
<tr>
<td>10:00 – 10:15</td>
<td>Breast Tumor Detection Processing and Performance based on TLM Analysis</td>
<td>J. Nielsen and E. Fear</td>
</tr>
<tr>
<td>10:15 – 10:30</td>
<td>Towards a Unifying Framework for Time-domain Numerical Methods</td>
<td>Zhizhang (David) Chen and Shui-ping Luo</td>
</tr>
</tbody>
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#### Session 2  Hybrid Techniques
*Chairman: Prof. R. VahlDieck*

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>10:45 – 11:00</td>
<td>Progress of the Finite-Volume Method in Time Domain (FVTD) and in Frequency Domain (FVFD)</td>
<td>Dirk Baumann, Klaus Krohne, Christophe Fumexaux and Rudiger VahlDieck</td>
</tr>
<tr>
<td>11:00 – 11:15</td>
<td>Perfect Match Total Field / Scattered - Field Formulation in FDTD for a Plane Wave Source Generated by Multipoint 1D Auxiliary Propagator</td>
<td>Tengmeng Tan and Mike Potter</td>
</tr>
<tr>
<td>11:15 – 11:30</td>
<td>Multi-Region Domain Decomposition FDTD Algorithm Based on Near-Field to Far-Field Transform and Equivalent Incident Fields</td>
<td>Feng Xu and Ke Wu</td>
</tr>
<tr>
<td>11:45 – 12:00</td>
<td>FVTD - Integral Equation Hybrid for Maxwell's Equations</td>
<td>Dmitry K. Firsov, Joe LoVetri and Vladimir Okhmatovski</td>
</tr>
<tr>
<td>12:00 – 12:15</td>
<td>The Bio-electromagnetic Equivalent Inverse State Model of Human Brain Activity with the Electrodynamics of Neurons</td>
<td>Taner Sengor</td>
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</tbody>
</table>

#### Session 3  Optimization Techniques for CEM
*Chairman: Prof. J. Bandler*

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>13:45 – 14:00</td>
<td>An Automated Space Mapping Framework</td>
<td>Qingsha S. Cheng and John W. Bandler</td>
</tr>
<tr>
<td>14:00 – 14:15</td>
<td>Knowledge Based Neuromodeling Using Compound Space Mapping</td>
<td>Murat Simsek and N. Serap Sengor</td>
</tr>
<tr>
<td>14:15 – 14:30</td>
<td>Cooperative Particle Swarm Optimization of Planar Microwave Filters</td>
<td>Alireza Mahanfar, Stephane Bila, Michel Aubourg and Serge Verdeyme</td>
</tr>
<tr>
<td>14:30 – 14:45</td>
<td>Time Domain Sensitivity Analysis of Lossy Dielectric Structures</td>
<td>Ying Li, Yan Li, Natalia K. Nikolova, and Mohamed H. Bakr</td>
</tr>
<tr>
<td>14:45 – 15:00</td>
<td>Neural Network Approaches to Microwave Modeling</td>
<td>Qi-Jun Zhang, Lei Zhang, Yi Cao, Humayun Kabir and Kui Bo</td>
</tr>
<tr>
<td>15:00 – 15:15</td>
<td>Efficient One-dimensional FDTD Modelling of Waveguide Structures</td>
<td>Shuiping Luo and Zhizhang (David) Chen</td>
</tr>
</tbody>
</table>

#### Tuesday June 20

#### Session 4  Modelling of Microwave Components
*Chairman: Prof. J. Bornemann*

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>09:00 – 09:15</td>
<td>Compact Dual-Band and Multi-Band Filters for Applications in Wireless Communications</td>
<td>Marjan Mokhtaari, Jens Bornemann and Smain Amari</td>
</tr>
<tr>
<td>09:15 – 09:30</td>
<td>A Derived Physically Expressive Circuit Model For Multi-Layer RF Embedded Passives</td>
<td>Ke-Li Wu and Jie Wang</td>
</tr>
<tr>
<td>09:30 – 09:45</td>
<td>A Novel Left-handed Transmission Line Based on Uniplanar Compact Photonic Bandgaps (UC-PBGs) and Grounded Mushrooms</td>
<td>Yasushi Horii and Akira Tanaka</td>
</tr>
<tr>
<td>09:45 – 10:00</td>
<td>S-Parameter Analysis on Coupling between DR and GCPW</td>
<td>HeeSang Noh and Ihn S. Kim</td>
</tr>
<tr>
<td>10:00 – 10:15</td>
<td>System Identification Procedure for Nearly Lossless Passive Microwave Structures</td>
<td>Yury Kuznetsov, Andrey Baev, Timophey Shevgunov, Petr Lorenz and Peter Russer</td>
</tr>
<tr>
<td>10:15 – 10:30</td>
<td>Modeling CPW on Lossy Si-Substrate Using the Cell Method</td>
<td>Maryam Heshmatzadeh and Greg E. Bridges</td>
</tr>
</tbody>
</table>
Session 5  TLM Modelling and Analysis
Chairman: Prof. P. Russer

10:45 – 11:00  Full-Wave Based Transmission-Line Model for Lossy-Substrate Multiconductor Interconnects
Behzad Kordi, Greg E. Bridges, Joe LoVetri and John E. Nordstrom

11:00 – 11:15  Numerical Modeling of Transient Radiated Interferences by the Hybrid TLM-TDMOM Method
Rachid Khelifi and Peter Russer

C.A. Tenorio de Carvalho Jr., N. Carvalho Pinheiro and L.R.A.X. de Menezes

11:30 – 11:45  Time-Domain Simulation of Multiconductor Transmission-Lines
John Paul, Christos Christopoulos and David W.P. Thomas

11:45 – 12:00  3D-TLM Modeling of Oriented Thin-Wires
Besma Larbi, Jean-Lou Dubard, Christian Pichot

12:00 – 12:15  Uncertainty Propagation in Transmission Line Modeling (TLM) Method
Geovany A. Borges and Leonardo R.A.X. de Menezes

Session 6  Modelling of Antenna Structures
Chairmen: Drs. J. Uher and Prof. J. Bornemann

13:45 – 14:00  EM Modelling of Complex Antenna Feeds
J. Uher, Y. Demers, J.P. Langevin, A Petosa

14:00 – 14:15  2.45 GHz Folded Dipole Antenna Design for RFID Applications: a Numerical Investigation
Mauro Mongiardo, Michele Patassini, Roberto Sorrentino, Cristiano Tomassoni, Roberto Vincenti Gatti

14:15 – 14:30  Balanced Antennas for 24 GHz Automotive Ultra-Wide Band Radar Sensors
Eswarappa Channabasappa

14:30 – 14:45  Analysis of Monopole Antenna for UWB Short Pulse Radiation
K. Rambabu, Adrian E.C. Tan and Michael Y.W. Chia

14:45 – 15:00  FDTD Simulations of Tunable Reflectarrays
Sean V. Hum and Michal Okoniewski

15:00 – 15:15  Simultaneous Electrical/Mechanical Optimization Technique for Composite Smart Antennas
Daniela Staiulescu, Chisang You, Lara Martin and Manos Tentzeris

15:15 – 15:30  A New Driver for Broadbanding Quasi-Yagi Uniplanar Antennas
F.C. Costa, G. Fontgaland, A.G. D'Assuncao, T.P. Vuong, and L.M. Mendonca

David Strong Building

The David F. Strong Building (formerly the classroom building) contains a variety of classroom spaces, from seminar and break-out rooms to lecture halls and the 200-seat Mathews and McQueen auditorium. Built in 1995, it was renamed the David F. Strong Building in 2000.

David F. Strong (left) was president and vice-chancellor of UVic from 1990 to 2000. Projects developed during his two five-year terms include the acquisition of the Ian H. Stewart Recreation Complex and the construction of residence structures that were used as the athletes village during the 1994 Commonwealth Games.
MacLaurin Building

The MacLaurin building is home to UVic's education faculty and school of music. The UVic curriculum lab contains more than 30,000 teaching tools and multi-media resources for creating lesson plans.

The David Lam Auditorium, located on the south side of the MacLaurin building, hosts a number of lecture classes and is also the main venue for several of the university's major public lecture series. The 323-seat lecture theatre was constructed in 1986.

The MacLaurin music wing was completed in 1978 and houses the 200-seat Phillip T. Young recital hall, numerous practice rooms and a professional quality recording studio.

Dr. Donald L. MacLaurin (1861 - 1958) was the founding Principal of the Victoria Provincial Normal School, which he led from 1913 to 1932 when he became assistant superintendent of education for B.C. The Victoria Provincial Normal School was a predecessor of UVic.

University Club

This west coast style facility is nestled in a wooded environment and features a large dining room with a seating capacity for approximately 240, a small dining room with a capacity of 30, two private dining rooms which each have a capacity of 15, a games room and two lounges.

Membership is open to UVic faculty, staff, and alumni, retirees and staff from other universities with which there is a reciprocal agreement, and corporate members.

Source: http://www.uvic.ca/buildings/mac.html

Source: http://www.uvic.ca/buildings/ucl.html
CEM Conferences in 2007

The 23rd International Review of Progress in Applied Computational Electromagnetics (ACES 2007)
March 19 – 23, 2007, Verona, ITALY

The purpose of the international annual ACES Symposium is to bring developers, analysts and users together to share information and experience about the practical application of EM analysis using computational methods. The symposium offers technical presentations, demonstrations, vendor booths, short courses, and hands-on workshops. All aspects of electromagnetic computational analysis are represented.

The following is a list of suggested topics, although contributions in other areas of computational electromagnetics are encouraged and will be considered.

Suggested Topics

- Integral Equation Methods
- Hybrid Techniques
- Optimization Techniques for CEM
- Low Frequency Electromagnetics
- Printed and Conformal Antennas
- Dielectric Resonator Antennas
- Smart Antenna and Arrays
- MEMS- NEMS and MMIC
- Propagation
- RF and Microwave Devices
- Non Destructive Techniques
- FEMO Modeling and Analysis
- CST Modeling and Analysis

Source: http://aces.ee.olemiss.edu
Workshop Co-Chairs
Prof. L. Roselli, University of Perugia, ITALY.
Prof. P. Mezzanotte, University of Perugia, ITALY.

International Steering Committee
Prof. M.M. Tentzeris, Georgia Tech, U.S.A.
Prof. S.El-Ghazaly, University of Tennessee, U.S.A.
Prof. T.Itoh, U.C.L.A., U.S.A.
Prof. C.Balanis, A.S.U., U.S.A.
Prof. J.Volakis, O.S.U. U.S.A.
Prof. Z. Chen, Dalhousie University, CANADA
Prof. W.J.R.Hoefer, University of Victoria, CANADA
Prof. M.Okoniewski, University of Calgary, CANADA
Prof. N.Nikolova, McMaster University, CANADA
Prof. P. So, University of Victoria, CANADA
Prof. C.Christopoulos, University of Nottingham, U.K
Prof. P.Russer, Technichal University of Munich, GERMANY
Prof. T.Weiland, Technical University of Darmstadt, GERMANY
Dr. P.Saguet, ENSERG, FRANCE
Prof. R.Vahldieck, E.T.H., SWITZERLAND
Prof. Jong-Gwan Yook, Yonsei University, S.KOREA
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