Final invitation to
and preliminary programme for
the co-organised conferences

RVK08  MMWP08
Växjö, Sweden
RVK08 / MMWP08

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Local organisation committee
Project leader: Anders Haggren, Växjö University
Börje Nilsson, Växjö University
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Information: Anders Runesson and Ann Nord, Växjö University
Secretary: Diana Unander, Sideum Innovation AB

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RVK08
Radio Science and Communications

MMWP08
Mathematical Modelling of Wave Phenomena for radio waves and signals
MMWP for acoustics, seismics and quantum waves
Welcome to RVK08 / MMWP08
at Växjö University in Sweden

We cordially invite you to take part in RVK08 and MMWP08, held in Växjö, Sweden, starting Monday afternoon, 9 June 2008.

RVK08 is the twentieth Nordic Conference on Radio Science and Communications (RadioVetenskap och Kommunikation) of the Swedish National Committee of URSI (SNRV). The RVK conferences have become very important gatherings, where industry, research institutes and academia exchange ideas and take part in recent developments in radio science and communications.

MMWP08 is the third International Conference on Mathematical Modelling of Wave Phenomena. The MMWP conferences present unifying ideas on wave modelling from different disciplines, treating fundamentals as well as applications. Both mechanical and electromagnetic waves together with related signal analysis will be considered, including comparisons with quantum waves.

This time the RVK and MMWP conferences are co-organised, providing new opportunities. During the first three days, 9-11 June 2008, radio science and communications along with related material on mathematical modelling of wave phenomena will be organised in joint sessions. The last two days, 12-13 June 2008, will be devoted to seismic, acoustic and quantum applications along with related material from numerical analysis, mathematical physics, mathematical modelling and scientific computing.

The conference will begin at 13.00 on Monday 9 June at Växjö University Campus (registration open from 10.00). On Monday, there will be thematic presentations by Swedish “Excellence Centres” covering “Top-Technology” in radio science and communications. On Tuesday, distinguished key-note speakers will cover relevant topics. From then on, invited talks and oral presentations will take place.

An exhibition will take place on Tuesday-Wednesday 10-11 June. Social activities include a reception on Monday, a conference dinner on Tuesday and a steam ship excursion on Wednesday. These are open for all conference delegates and their accompanying persons.

The conferences will be treated, as far as possible, as one conference with a joint schedule of talks and one system of registration etc., giving participants the possibility to choose the most interesting talks during the entire conference week. For registration and further information, please visit our websites www.vxu.se/rvk08 and www.vxu.se/mmwp. Early registrations will be appreciated.

The official language of the conference is English; thus all papers, transparencies and presentation material should be in English. However, oral presentations may be given in any Scandinavian language, if preferred.
Thematic Presentations
Top-Technology and Centres of Excellence

Monday afternoon: The thematic invited speakers will give an overview of Swedish Top-Technology and Excellence Centres in Radio Science and Communications.

Dr. Stefan Parkvall, Ericsson • Long-Term 3G Evolution – Concept Overview


Prof. Claes Beckman, University of Gävle • Center for RF-Measurement Technology

Prof. Bo Thidé, Uppsala University • LOIS Space Center, Växjö

Prof. Jens Zander, KTH • Wireless@KTH

Prof. Mats Viberg, Chalmers • Centre for Microwave Antenna Systems (CHARMANT)

Ingmar Karlsson, M. Sc., Chalmers • Antenna Systems Excellence Centre (CHASE)

Prof. John B Anderson, Lund University • Centre for High Speed Wireless Communication (HSWC)

Prof. Herbert Zirath, Chalmers • GigaHertz Centre

Prof. Björn Ottersten, KTH • Autonomic Complex Communication Networks, Signals and Systems (ACCESS)

Keynotes

Tuesday morning: A few distinguished keynote speakers will give interesting overviews on their own topics of speciality with a relation to Mathematical Modelling of Wave Phenomena, as well as to Radio Science and Communications.

Dr. Lars Falk, FOI • Title: Surveillance and Deception – 100 Years of Military Radio Waves

Lars Falk is Laborator (Senior Research Officer) at the Swedish Defence Research Agency where he specialises in radar and electronic warfare. He obtained his Ph. D. from Chalmers University of Technology in Gothenburg in 1979 in the area of electromagnetic wave propagation and has been with the Swedish Defence Research Agency for fifteen years.
Lars Falk has recently developed a theory of crosseye-jamming and new concepts for electronic warfare against network centric warfare. He teaches Bayesian statistics and decision theory and has also developed a borehole radar for the nuclear waste storage program. Falk is interested in the history of science, especially Newton and Pauli, and has published a number of articles in this field. He is a chess master and secretary of the Karlfeldt Society (Karlfeldtsamfundet) devoted to the poetry of the Swedish 1931 Nobel Prize winner Erik Axel Karlfeldt. He is living in Uppsala, a university town north of Stockholm.

Prof. Mathias Fink • Title: Time-Reversed Waves, Metamaterials and Super-Resolution
Mathias Fink is a Professor of Physics at the Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (ESPCI) and at Paris 7 University (Denis Diderot), France. In 1990 he founded the Laboratoire Ondes et Acoustique at ESPCI. His research is concerned with the propagation of waves in complex media and the development of instrumentation based on this basic research. The domain of applicability is vast: medical imaging and therapy, underwater acoustics, seismology, non-destructive testing, telecommunications, tactile screens and instrumentation. Mathias Fink has a long history of collaboration with industry and works with companies in a wide variety of sectors (medical, aeronautics, underwater acoustics, nuclear, metallurgy, instrumentation). He pioneered many innovative approaches such as “time-reversal mirrors” or “transient elastography”. He was elected at the French Academy of Engineering in 2002 and at the French Academy of Sciences in 2003 (www.mps.mpg.de/meetings/seismo/helas2/specsess.html).

Prof. Hans Olofsson, Onsala space observatory • Title: Scientific and Technical Challenges in Radio Astronomy
Hans Olofsson is born in 1952 in Gothenburg. He obtained a M. Sc. in electrical engineering at Chalmers in 1975, and in 1983 he obtained a Ph. D. degree on a thesis on interstellar and circumstellar clouds. In 1987 he became a docent in radio astronomy at Chalmers, and was appointed professor of astronomy at Stockholm University in 1983. Hans Olofsson became a guest professor of radio astronomy at Chalmers on December 1, 2005, at the same time that he was appointed director of Onsala Space Observatory, the Swedish National Facility for Radio Astronomy.

Mr. J. Christopher Ramming, Program Manager, Strategic Technology Office, Defense Advanced Research Projects Agency • Title: Challenges and Potential Solutions for Future Mobile Ad Hoc Networks
Christopher Ramming recently concluded a term as program manager in DARPA's Strategic Technology Office. In this role, his primary charter was to vastly improve wireless network performance, self-management, and intrinsic security. Prior to joining DARPA, the bulk of Mr. Ramming’s career was with AT&T/Bell Labs Research. He has a broad background in telecommunications technology and particularly enjoys working at the intersection of theory and practice to transform high-risk/high-payoff research ideas into working systems. Mr. Ramming holds degrees in computer science from Yale and the University of North Carolina, Chapel Hill.
Submitted contributions

The following contributions, organised by subject and communicating author, are submitted to the conference. Invited contributions are marked with ».

1. Electromagnetic metrology

Elfsberg Mattias, FOI – Swedish Defence Research Agency (SWE) • Magnetic Field Measurement System for HPM Research

Habib Khaled, Materials Science Lab. (KUW) • Measurement of Oxide Barrier-Film and Oxide Porous-Layer of Anodized Aluminium by Electronic and Electromagnetic Tools

Höijer Magnus, FOI – Swedish Defence Research Agency (SWE) • Comparison of the Rectangular and Total Electric Field Components in a Complex Environment

Larsson Christer, Lund University (SWE) • Extinction Cross Section Measurements

2. Biological and medical aspects

Johansson Marcus, Chalmers University of Technology (SWE) • Phase-Retrieval from Amplitude-Only Field Measurements

Trefna Hana, Chalmers University of Technology (SWE) • Antenna Array for Stroke Detection

3. Electromagnetic fields and waves

» Sjöberg Daniel, Lund University (SWE) • Waves in Ferromagnetic Media

Cinar Gokhan, Gebze Institute of Technology (TUR) • Wiener-Hopf Analysis of Plane Wave Diffraction by an Impedance Strip Attached on a Perfectly Conducting Half-Plane

Elfsberg Mattias, FOI – Swedish Defence Research Agency (SWE) • Research on Narrow-Band High-Power Microwave Sources Performed at FOI

Lafarge Denis, Université du Maine (FRA) • A “Maxwellian” Macroscopic Acoustics with Spatial Dispersion

Nordebo Sven, Växjö University (SWE) • Estimation of Parameters of an Inhomogeneous Dielectric Layer

Olyslager Femke, Ghent University (BEL) • New Plane Wave Addition Theorems

Sandström Sven-Erik, Växjö University (SWE) • Computation of the Fock Scattering Functions

Sautbekov Seil, Euroasian National University (KAZ) • Electromagnetic Scattering Theory for Gratings Based on the Weiner-Hopf Method

Sohl Christian, Lund University (SWE) • Bounds on the Direct Scattering Problem of Acoustic and Electromagnetic Waves
4. Electromagnetic noise and interference

Bäckström Mats, Saab Communication (SWE) • On the Response and Immunity of Electric Power Infrastructure Against IEMI – Ongoing Swedish Initiatives

Karlsson Carl, University of Gävle (SWE) • Intersystem Interference between Middletons Class A Noise and Bluetooth

Lundén Olof, FOI – Swedish Defence Research Agency (SWE) • Absorber Loading Study in FOI 36.7 m³ Mode Stirred Reverberation Chamber for Pulsed Power Measurements

Thottappilil Rajeev, Uppsala University (SWE) • Susceptibility of Electrified Railway Facilities to Intentional Electromagnetic Interference

5. Space physics and radio astronomy

Wannberg Gudmund, EISCAT Scientific Association (SWE) • EISCAT_3D: Background, Progress, Current Status and Next Steps

6. Radio wave propagation

Holm Peter, FOI – Swedish Defence Research Agency (SWE) • Wide-Angle Shift-Map PE for a Piece-wise Linear Terrain

Linder Sara, FOI – Swedish Defence Research Agency (SWE) • Results from a MIMO Channel Measurement at 300 MHz in Central Linköping

Mohammed Abbas, Blekinge Institute of Technology (SWE) • Channel Modelling and Characterization for Mobile Satellite Communication Systems

Mohammed Abbas, Blekinge Institute of Technology (SWE) • Multipath Wave Propagation Effects on the Performance of OFDM UMTS-LTE Communication System

Smirnov Vladimir, IRE RAS (RUS) • Use of the Navigating Satellite Systems for the Forecast of the Maximum Usable Frequencies

7. Radar and remote sensing

Falk Lars, FOI – Swedish Defence Research Agency (SWE) • Design of Crosseye Jamming Systems

Gustavsson Anders, FOI – Swedish Defence Research Agency (SWE) • First Results from a Bistatic VHF SAR Experiment

Kjellgren Jan, FOI – Swedish Defence Research Agency (SWE) • On Short-Range Radiometry Using Artificial Illumination

Nelander Anders, FOI – Swedish Defence Research Agency (SWE) • Beamforming Methods in Terrain Scattering Scenarios

Pettersson Mats, Blekinge Institute of Technology (SWE) • Multi-Dimensional Hypotheses Test for Movement Detection in Wide Band Radar Associated with Long Integration Time

Sume Ain, FOI – Swedish Defence Research Agency (SWE) • See-Around-Corners with Coherent Radar – New Strategic Work at the FOI

8. Electronical and optical circuits

Karlsson Anders, Lund University (SWE) • Substrate Integrated Waveguides
9. Signal processing

Rydberg Anders, Uppsala University (SWE) • Presentation of the New VINN Excellence Center for Wireless Sensor Networks (WISENET)

Bhavani Shankar, Mysore Ramarao, ACESS Linnaeus Center (SWE) • A Novel Space-Time-Frequency Code for Multiband-OFDM UWB Systems with Multiple Antennas

Björnsson Emil, Royal Institute of Technology (KTH) (SWE) • Pilot-based Bayesian Channel Norm Estimation in Rayleigh Fading Multi-Antenna Systems

Björnsson Emil, Royal Institute of Technology (KTH) (SWE) • Schur-Convexity of the Symbol Error Rate in Correlated MIMO Systems with Precoding and Space-Time Coding

Johansson Anders, Blekinge Institute of Technology (SWE) • Implementation Strategies for Array Localisation Algorithms Based on the SRP-PHAT

Khan Muhammad Gufran, Blekinge Institute of Technology (SWE) • Signalling and Detection of UWB Signals Based on a Dual-Doublet Transmitted Reference Scheme

Kravchenko Victor F., Institute of RadioEngineering and Electronics (RUS) • A New Class of Orthogonal Kravchenko Wavelets

Lindqvist Fredrik, Lund University (SWE) • Low-Order and Causal Twisted-Pair Cable Modelling by Means of the Hilbert Transform

Lioliou Panagiota, Chalmers University of Technology (SWE) • Channel Estimation Performance for Mimo

Nilsson Magnus, Blekinge Institute of Technology (SWE) • A Two-Metric Approach to Improve Bounds on the Minimum Euclidean Distance for Block Codes

Prija Adnan, Lund University (SWE) • Faster-than-Nyquist Modulation Based on Short Finite Pulses

Zepernick Hans-Jürgen, Blekinge Institute of Technology (SWE) • App Decoding of Block Codes over Prime Fields on Non-Binary Gilbert-Elliott

10. Radio systems and personal communications

Mohammed Abbas, Blekinge Institute of Technology (SWE) • Coded Cooperative Communications

11. Antennas and antenna systems

Hallbjörner Paul, SP (SWE) • Bringing the Mobile Terminal Drive Test into the Lab

Khalid M Bilal, KTH Electrical Engineering (SWE) • Capacity and Gain Analysis of a Reconfigurable MEMS Antenna

Sohl Christian, Lund University (SWE) • A Priori Bounds on the Onset Frequency of Wideband Antennas

Timbus Raul, Saab Space (SWE) • Conical Quadrifilar Helix Antenna: A Comparison between Measurements and Simulations Performed with HFSS, Comsol, WireMoM and QuickWave
12. Communication networks and QoS

Bergfeldt Erik, Linköping University (SWE) • Bandwidth Estimation over a High-Speed Downlink Shared Channel in UMTS

Fodor Victoria, Royal Institute of Technology (KTH) (SWE) • Sensor Network Dimensioning for Coverage

Åkermark Hans, Saab Communication (SWE) • Resource Management for Future Airborne Platforms

13. Technoeconomics in radio networks

Nilson Mats, Wireless@KTH (SWE) • Green Radio in Heterogeneous Wireless Wideband Networks

Timus Bogdan, KTH (SWE) • Economic Viability of Deployment Strategies for Cellular-Relaying Networks

14. Acoustics

» de Hoop Adrian, Delft University of Technology (NED) • Line-Source Excited Pulsed Acoustic Wave Reflection Against the Mass-Loaded Boundary of a Fluid

Alestra Stephane, EADS Innovation Works (FRA) • A Time Domain Inverse Method for Identification of Random Acoustic Sources at Launch Vehicle Lift-Off

Andersson Anders, Växjö University (SWE) • Acoustic Transmission in Ducts of Various Shapes with an Impedance Condition

Boij Susann, KTH (SWE) • Acoustic Energy and Scattering in Flow Ducts

Peplow Andrew, KTH (SWE) • Acoustic Waves in Variable Sound Speed Profiles

15. Flow acoustics and fluid dynamics

Ghorbaniasia Ghader, Vrije Universiteit Brussel (BEL) • On the Numerical Simulation of Noise Prediction from Permeable Surfaces

Punekar Jyothi, academic (UK) • Computations of Nonlinear Propagation of Sound Emitted from Supersonic Mixing Layers

16. Optics

Morozov Gregory, University of Bristol (UK) • Optical Microdisk Resonator with a Small but Finite Size Scatterer

Morozov Gregory, University of Bristol (UK) • Semiclassical Coupled Wave Theory for 1D Photonic Crystals with Dissipation

17. Seismics/seismo-acoustics

Lisitsa Vadim, Institute of Petroleum Geology and Geophysics SB (RUS) • Finite-Difference Simulation of Waves Propagation in Anisotropic Elastic Media

Silvestrov Ilya, Institute of Petroleum Geology and Geophysics (RUS) • Singular Value Decomposition Analysis for Elastic Waveform Inversion of Cross-Well Tomography Data

Stolk Christiaan, University of Twente (NED) • Computing in the x-k Domain for Wave Equation Imaging
18. Inverse scattering problems

- Cheney Margaret, Department of Mathematical Sciences, Rensselaer Polytechnic Institute, NY (USA) • Radar Imaging
- Fink Mathias, École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (ESPCI) and Paris 7 University (Denis Diderot) (FRA)
- Fishman Lou, MDF International (USA) • Some Thoughts on the Inclusion of Multiple Scattering in a Phase-Space-Based Marching Velocity Field Reconstruction Algo
- Asekritova Irina, Växjö University (SWE) • Diffractive Index Determination by Tikhonov Regularization on Forced String Vibration Data
- Fhager Andreas, Chalmers University of Technology (SWE) • On the use of Global Reconstruction Methods for Exploiting A Priori Data in Microwave Tomography Image Reconstruction
- Rydström Sara, Växjö University (SWE) • An Acoustic Method for Finding Weak Parts in Wooden Logs
- Sjödén Therese, Växjö University (SWE) • Sensitivity Analysis for the Estimation of Twist in Logs Based on Microwave Scattering

19. Waves in solids

- Kossovich Leonid, Saratov State University (RUS) • Asymptotic Methods in Dynamics of Shells

20. Numerical and mathematical methods

- Engquist Björn, Royal Institute of Technology (KTH) (SWE) and University of Texas at Austin (USA) • A Fast Multipole Method for High Frequency Wave Propagation
- Guillaume Sylvand, EADS Innovation Works (FRA) • BEM in Waves Propagation Simulation at EADS Innovation Works
- Jacobsson Per, Chalmers University of Technology (SWE) • Shape and Material Optimization of Total Radar Cross Section for Antenna Struts
- Kravchenko Victor F., Institute of RadioEngineering and Electronics (RUS) • The Selection of Basis Functions Systems for Determination of Cutoff Frequency of Waveguides and Resonators of Complex Shape with the Help of r-Functions Method

21. Non-linear problems

- Desaix Mats, University College of Borås (SWE) • Nonlinear Schrödinger Solitons with Non-Zero Velocities Emerging from Real Symmetric Initial Conditions
- Lars Jonsson, Electromagnetic Engineering at KTH (SWE) • A Numerical Approach to the Kernel Condition of a Linearized Pseudo-Relativistic Hartree Equation
- Shelkovich Vladimir, State University of Architecture and Civil Engineering University (RUS) • δ-Shock Waves Type Solutions in Multidimensional System of Conservation and the Transportation and Concentration Process
- Shermenev Alexander, General Physics (RUS) • Two-Waves Interaction in a Cylinder
- Sukov Alexander, Moscow State Technological University (RUS) • Singular Nonlinear Problem for Self-Similar Solutions to the Boundary Layer Equation
22. Asymptotic methods

Vainberg Boris, UNC at Charlotte (USA) • Propagation of Waves in Networks of Thin Fibers
Wilde Maria, Saratov State University (RUS) • Asymptotic Analysis of Edge Resonances in a Semi-Infinite Open Cylindrical Shell

23. Quantum phenomena

» Berggren Karl-Fredrik, Linköping University (SWE) • Nature of Streamlines for Berry-Type Wave Functions in Open 3D Cavities
Hilbert Astrid, Växjö University (SWE) • On a Singular Stochastic System Related a Nonlinear Schrödinger Equation
Ishio Hiromu, Nagoya University (JPN) • Understanding of Rich Fluctuations in Quantum Transport through Open Chaotic Cavities
Smolyanov Oleg, Moscow State University (RUS) • Mathematical Modelling of Quantum Quasiparticles with Position Dependent Mass via Functional Integrals

Växjö University has a strong international profile and is renowned for its attractive campus.

The city of Växjö is centrally located in the south of Sweden and has excellent communications.
Registration

The joint registration to RVK08/MMWP08 is done through either one of our websites www.vxu.se/rvk08 and www.vxu.se/mmwp. A preliminary time schedule will be posted here in April 2008. The information on these pages will expand as the conference approaches.

Registration fee
To attend the conference, please register no later than 15 May 2008. The conference fee is 4500 SEK (2500 SEK for students), excluding VAT. For late registrations, after 25 April 2008, the fee is increased to 5500 SEK (3500 SEK for students), excluding VAT.

The conference fee gives access to the whole scientific programme during the entire week, the exhibition, a copy of the conference documentation on USB memory, welcome reception, conference dinner, lunch and coffee. A printed copy of the documentation may be obtained at an additional cost. Accompanying persons will be given the opportunity to participate in the social events.

Hotel
A limited number of hotel rooms have been reserved at special block price for the conference. More information is available on the website.

Contact with RVK08/MMWP08 – RVK08@vxu.se

Welcome to RVK and MMWP in Växjö in June 2008!