

Opening Ceremony and Invited Talks

Opening ceremony

Monday afternoon, 9 June, in room Linné.

- 1.00 Kristina Alsér, County Governor of Kronoberg.
Johan Sterte, vice-chancellor of Växjö University.
Gerhard Kristensson, Chairman of SNRV.
Opening of the RVK08/MMWP08 conference.

Thematic presentations

Monday afternoon, 9 June, in room Linné.

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

- 1.20 Stefan Parkvall, Ericsson
Long-Term 3G Evolution - Concept Overview
- 1.40 Johan Henriksson, Saab Communication
Interference and Collocation Issues for Radio Communication Systems in Airborne Early Warning and Control system
- 2.00 Claes Beckman, University of Gävle
Center for RF-measurement technology
- 2.20 Bo Thidé, Uppsala University
LOIS Space Center
- 2.40 Jens Zander, KTH
Wireless@KTH
- 3.00 Coffee-break
- 3.40 Mats Viberg, Chalmers
Centre for Microwave Antenna Systems (CHARMANT)
- 4.00 Ingmar Karlsson, Chalmers
Antenna Systems Excellence Centre (CHASE)
- 4.20 John B. Anderson, Lund University
Centre for High Speed Wireless Communication (HSWC)
- 4.40 Herbert Zirath, Chalmers
GigaHertz Centre
- 5.00 Björn Ottersten, KTH
Autonomic Complex Communication Networks, Signals and Systems (ACCESS)

Keynotes

Tuesday morning, 10 June, in room Linné.

A few distinguished key-note 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.

8.30 Dr. Lars Falk, FOI

Surveillance and deception - 100 years of military radio waves

9.10 Prof. Mathias Fink, ESPCI

Time-reversed waves, metamaterials and superresolution

9.50 Coffee-break

10.40 Prof. Hans Olofsson, Onsala space observatory

Scientific and technical challenges in radio astronomy

11.20 Mr. J. Christopher Ramming, DARPA

Challenges and Potential Solutions for Future Mobile Ad Hoc Networks

12.00 Lunch

Invited contributions, technical and scientific sessions

Tuesday afternoon, 10 June, at 1.00 pm, until Friday afternoon, 13 June.

A number of invited speakers will give scientific presentations to initiate some of the technical and scientific sessions. On Tuesday afternoon, 10 June, there is also one additional presentation of Excellence Centers in room Wicksell.

1.00 Prof. Anders Rydberg, Uppsala University

Presentation of the new VINN Excellence Center for Wireless Sensor Networks (WISENET)

Technical and scientific sessions

The following technical and scientific contributions will be presented at the conference. Invited contributions are marked with *.

1 Signal processing I

Tuesday afternoon, 10 June

Room Wicksell

Chairman: Anders Rydberg and Peter Händel

- 1.00 *Presentation of the new VINN Excellence Center for Wireless Sensor Networks (WISENET), *Anders Ahlen, Bengt Ahlgren, Roland Grönros, Per Gunningberg, Klas Hjort, Ilija Katardjiev, Christian Rohner, Anders Rydberg, Thiemo Voigt.*
- 1.30 Schur-Convexity of the Symbol Error Rate in Correlated MIMO Systems with Pre-coding and Space-Time Coding, *Emil Björnson, Pandu Devarakota, Samer Medawar, Eduard Jorswieck.*
- 1.50 Implementation Strategies for Array Localisation Algorithms Based on the SRP-PHAT, *Anders M. Johansson.*
- 2.10 A Novel Space-Time-Frequency Code for Multiband-OFDM UWB Systems with Multiple Antennas, *Bhavani Shankar.*
- 2.30 Pilot-Based Bayesian Channel Norm Estimation in Rayleigh Fading Multi-Antenna Systems, *Emil Björnson, Björn Ottersten.*
- 2.50 Coffee-break.
- 3.40 Channel Estimation Performance for MIMO Relays, *Panagiota Lioliou, Mats Viberg.*
- 4.00 A Two-Metric Approach to Improve Bounds on the Minimum Euclidean Distance for Block Codes, *Magnus Nilsson, Håkan Lennerstad, Efraim Laksman.*
- 4.20 Low-Order and Causal Twisted-Pair Cable Modeling by Means of the Hilbert Transform, *Fredrik Lindqvist, Per Ola Börjesson, Per Ödling, Stefan Höst, Klas Ericson, Thomas Magesacher.*
- 4.40 Signaling and Detection of UWB Signals based on a Dual-Doublet Transmitted Reference Scheme, *Muhammad Gufran Khan, Jörgen Norberg, Ingvar Claesson.*
- 5.00 A New Class of Orthogonal Kravchenko Wavelets, *Victor F. Kravchenko, Dmitry V. Churikov.*

2 Electromagnetic fields and waves I

Tuesday afternoon, 10 June

Room Myrdal

Chairman: Adrian de Hoop

- 1.00 Bounds on the Direct Scattering Problems of Acoustic and Electromagnetic Waves, *Christian Sohl, Mats Gustafsson, Gerhard Kristensson.*
- 1.20 Estimation of Parameters of an Inhomogeneous Dielectric Layer, *Sven Nordebo, Börje Nilsson, Oscar Lindhe.*

- 1.40 Computation of the Fock Scattering Functions,
Sven-Erik Sandström.
- 2.00 New Plane Wave Addition Theorems,
Ignace Bogaert, Femke Olyslager.
- 2.20 Electromagnetic Scattering Theory for Gratings based on the Weiner-Hopf Method,
Seil Sautbekov, Börje Nilsson.
- 2.40 Realistic RF Invisibility or Not: Comparisons of the Original Superstealth Approach
using Hard Surfaces and Last Years Cloaking using Metamaterials, *Per-Simon Kildal.*
- 3.00 Coffee-break.
- 3.40 Comparison of the Rectangular and Total Electric Field Components in a Complex
Environment, *Magnus Höijer, Hans-George Krauthäuser, Luk R. Arnaut.*
- 4.00 Propagation of Electromagnetic Waves in a Waveguide with an anisotropic magne-
toactive plate of finite thickness, *E. A. Gevorkyan.*

3 Radio systems and communications, Communications net- works and QoS and Teknoeconomics in radio networks

Tuesday afternoon, 10 June

Room Weber

Chairman: Peter Karlsson

- 1.00 Bandwidth Estimation over a High-Speed Downlink Shared Channel in UMTS,
Erik Bergfeldt, Svante Ekelin, Johan M. Karlsson.
- 1.20 Sensor Network Dimensioning for Coverage,
Victoria Fodor, Alonso Zúñiga.
- 1.40 Resource Management for Future Airborne Platforms,
Hans Åkermark.
- 2.00 “Green Radio” in Heterogeneous Wireless Wideband Networks,
Anders Västberg, Klas Johansson, Jens Zander, Mats Nilson.
- 2.20 Economic Viability of Deployment Strategies for Cellular-Relaying Networks,
Bogdan Timus, Mats Nilson.
- 3.00 Coffee-break.

4 Antennas and antenna systems I

Tuesday afternoon, 10 June

Room Weber

Chairman: Anders Karlsson

- 3.40 Bringing the Mobile Terminal Drive Test Into the Lab,
Paul Hallbjörner, Zhinong Ying, Mikael Håkansson, Tommi Anttila, Jan Welinder.
- 4.00 Shape and Material Optimization of Total Radar Cross Section for Antenna Struts,
Per Jacobsson, Thomas Rylander.
- 4.20 A Priori Bounds on the Onset Frequency of Wideband Antennas,
Christian Sohl, Mats Gustafsson.
- 4.40 Conical Quadrifilar Helix Antenna: A Comparison Between Measurements and Sim-
ulations, *Raul Timbus, Mikael Öhgren.*

5 Biological and medical aspects

Wednesday morning, 11 June

Room Wicksell

Chairman: Sven Nordebo

8.30 Phase-Retrieval from Amplitude-Only Field Measurements,

Markus Johansson, Mikael Persson.

8.50 Antenna Array Design for Stroke Detection,

Hana Trefná, Mikael Persson.

6 Electromagnetic fields and waves II, Antennas and antenna systems II

Wednesday morning, 11 June

Room Wicksell

Chairman: Daniel Sjöberg

9.10 *Waves in Ferromagnetic Media,

Daniel Sjöberg, Jörgen Ramprecht.

9.40 Research on Narrow-Band High-Power Microwave Sources Performed at FOI,

Anders Larsson, Mose Akyuz, Patrik Appelgren, Mattias Elfsberg, Tomas Hurtig, Cecilia Möller, Sten E. Nyholm.

10.00 Coffee-break.

10.40 A “Maxwellian” Macroscopic Acoustics with Spatial Dispersion,

Denis Lafarge, Aroune Duclos.

11.00 Extinction Cross Section Measurements,

Christer Larsson, Christian Sohl, Mats Gustafsson, Gerhard Kristensson.

11.20 Capacity and Gain Analysis of a Reconfigurable MEMS Antenna,

Marc Mowlér, M. Bilal Khalid, Björn Lindmark, Björn Ottersten.

11.40 Development of Decade Bandwidth and Multiband Feeds for Future Scientific and Commercial Reflector Antenna Systems, *Jian Yang, Per-Simon Kildal, Yogesh B. Karandikar, Xiaoming Chen, Niklas Wadefalk, Jungang Yin.*

12.00 Lunch.

7 Space physics, Radio wave propagation, Signal processing II

Wednesday morning, 11 June

Room Myrdal

Chairman: Gudmund Wannberg and Abbas Mohammed

8.10 EISCAT-3D: The Third Generation European Incoherent Scatter Radar System,

Gudmund Wannberg.

8.30 Incoherent Scatter Radar Measurements of Field Aligned Currents in the Polar Region, *Ingemar Häggström.*

8.50 Multipath Wave Propagation Effects on the Performance of OFDM UMTS-LTE Communication System, *Ammar Osman, Abbas Mohammed, Zhe Yang.*

- 9.10 Results from a MIMO Channel Measurement at 300 MHz in Central Linköping,
Gunnar Eriksson, Peter D. Holm, Sara Linder, Kia Wiklundh.
- 9.30 Use of the Navigating Satellite Systems for the Maximum Usable Frequencies Forecast,
V. M. Smirnov, A. P. Malkovsky, E. V. Smirnova, S. I. Tynyankin.
- 9.50 Coffee.
- 10.40 Channel Modelling and Characterization of Mobile Satellite Communication Systems,
Ajayi Taiwo Seun, Abbas Mohammed, Zhe Yang, Maria Solomonsson.
- 11.00 Faster-than-Nyquist Modulation Based on Short Finite Pulses,
Fredrik Rusek, Adnan Prlja, Dževdan Kapetanović, John B. Anderson.
- 11.20 App Decoding of Block Codes over Prime Fields on Non-Binary Gilbert-Elliott Channels,
Wayne Griffiths, Hans-Jürgen Zepernick, Manora Caldera.
- 12.00 Lunch.

8 Inverse scattering I

Wednesday afternoon, 11 June

Room Wicksell

Chairman: Margaret Cheney

- 1.00 *Radar Imaging that Combines Temporal, Spectral, and Spatial Diversity,
Margaret Cheney, Brett Borden.
- 1.30 *Supersonic Shear Imaging: A Multi-Wave Imaging Example,
Mathias Fink.
- 2.00 On the use of Global Reconstruction Methods for Exploiting A Priori Data in Microwave Tomography Image Reconstruction,
Andreas Fhager, Chen-Chih Chen, Alexey Voronov, Mikael Persson.
- 2.20 Sensitivity Analysis for the Estimation of Twist in Logs based on Microwave Scattering,
Therese Sjödén, Börje Nilsson, Sven Nordebo.

9 Radar and remote sensing

Wednesday afternoon, 11 June

Room Wicksell

Chairman: Margaret Cheney, Lars Falk

- 2.40 Design of Crosseye Jamming Systems,
Lars Falk, Claes Arvidsson, Sven Berghlund, Anders Eneroth.
- 3.00 First Results from a Bistatic VHF SAR Experiment,
Anders Gustavsson, Björn Flood, Per-Olov Fröling, Tommy Jonsson, Gunnar Stenström, Lars M. H. Ulander.
- 3.20 Coffee-break.
- 3.40 On Short-Range Radiometry using Artificial Illumination,
Jan Kjellgren, Harald Merkel, Jan Svedin.
- 4.00 Beamforming Methods in Terrain Scattering Scenarios,
Anders Nelander.

- 4.20 Multi-Dimensional Hypotheses Test of Movement Detection in Wide Band Radar Systems Associated with Long Integration Time, *M. I. Pettersson, V. T. Vu, T. K. Sjögren, A. Gustavsson.*
- 4.40 See-Around-Corners with Coherent Radar – New Strategic Work at the FOI, *Ain Sume, Magnus Gustafsson, Anna Jänis, Stefan Nilsson, Anders Örbom.*

10 Electromagnetic noise and interference

Wednesday afternoon, 11 June

Room Myrdal

Chairman: Mats Bäckström and Olof Lundén

- 1.00 Response and Immunity of Electric Power Infrastructures Against IEMI – Ongoing Swedish Initiatives, *Raul Montaña, Mats Bäckström, Daniel Månsson, Rajeev Thottappillil.*
- 1.20 Intersystem Interference Between Middletons Class A Noise and Bluetooth, *Carl Karlsson, Peter Stenumgaard, Kia Wiklundh.*
- 1.40 Loading Study in FOI 36.7 m³ Mode Stirred Reverberation Chamber, *Olof Lundén, Mats Bäckström.*
- 2.00 Susceptibility of Electrified Railway Facilities to Intentional Electromagnetic Interference, *Rajeev Thottappillil, Daniel Månsson, Mats Bäckström.*

11 Electromagnetic metrology

Wednesday afternoon, 11 June

Room Myrdal

Chairman: Mats Bäckström and Olof Lundén

- 2.20 Magnetic Field Measurement System for HPM Research, *Cecilia Möller, Mattias Elfsberg, Anders Larsson, Sten E. Nyholm.*
- 2.50 Coffee-break.

12 Acoustics

Thursday morning, 12 June

Room Wicksell

Chairman: Adrian de Hoop

- 8.30 *Line-Source Excited Pulsed Acoustic Wave Reflection Against the Mass-Loaded Boundary of a Fluid, *Adrianus T. de Hoop.*
- 9.00 Acoustic Transmission in Ducts of Various Shapes with an Impedance Condition, *Anders Andersson, Börje Nilsson.*
- 9.20 Acoustic Energy and Scattering in Flow Ducts, *Susann Boij.*
- 9.40 Acoustic Waves in Variable Sound Speed Profiles, *Andrew Peplow, Börje Nilsson.*
- 10.00 Coffee-break.

13 Flow acoustics and fluid dynamics, waves in solids

Thursday morning, 12 June

Room Wicksell

Chairman: Lou Fishman

- 10.40 A Numerical Simulation of Sound Wave from Permeable Surfaces,
G. Ghorbaniasl, P. Widera, C. Hirsch, C. Lacor.
- 11.00 Computations of Nonlinear Propagation of Sound Emitted from Supersonic Mixing Layers, *Jyothika Punekar, Eldad Avital.*
- 11.20 Modeling a Clamped Boring Bar using Euler-Bernoulli Beam Models with Various Boundary Conditions, *Tatiana Smirnova, Henrik Åkesson, Lars Håkansson, Ingvar Claesson, Thomas Lagö.*
- 12.00 Lunch.

14 Inverse scattering problems II

Thursday afternoon, 12 June

Room Wicksell

Chairman: Denis Lafarge

- 1.00 *Time Reversal Mirrors, Time Reversal Cavities, Cross Correlation Functions, Point Spread Functions, Time Reversal Invariance, and all that Jazz, *Lou Fishman.*
- 1.30 Diffractive Index Determination by Tikhonov Regularization on Forced String Vibration Data, *Irina Asekritova, Börje Nilsson, Sara Rydström.*
- 1.50 An Acoustic Method for Finding Weak Parts in Wooden Logs,
Sara Rydström, Börje Nilsson.
- 2.10 Some Thoughts on the Inclusion of Multiple Scattering in a Phase-Space-Based Marching Velocity Field Reconstruction Algorithm, *Lou Fishman.*

15 Seismics/seismo-acoustics

Thursday afternoon, 12 June

Room Wicksell

Chairman: Lou Fishman

- 2.30 Finite-Difference Simulation of Waves Propagation in Anisotropic Elastic Media,
Vadim Lisitsa, Egor Lys.
- 2.50 Coffee-break.

16 Electronical and optical circuits, optics

Thursday afternoon, 12 June

Room Wicksell

Chairman: Thomas Biro

- 3.40 Substrate Integrated Waveguides,
Thomas Biro, Anders Karlsson, Börje Nilsson.

- 4.00 Optical Microdisk Resonator with a Small but Finite Size Scatterer,
C. P. Dettmann, G. V. Morozov, M. Sieber, H. Waalkens.
- 4.20 Semiclassical Coupled Wave Theory for 1D Photonic Crystals with Dissipation,
G. V. Morozov, D. W. L. Sprung, J. Martorell.

17 Numerical and mathematical methods

Friday morning, 13 June

Room Wicksell

Chairman: Björn Engquist

- 8.30 *A Fast Multipole Method for High Frequency Wave Propagation,
Björn Engquist.
- 9.00 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,
Victor F. Kravchenko, Aleksey Yurin.
- 9.20 Wave-Front Sets of Fourier Lebesgue Types,
Joachim Toft.
- 9.40 Coffee-break.

18 Nonlinear problems

Friday morning, 13 June

Room Wicksell

Chairman: Lou Fishman

- 10.00 Nonlinear Schrödinger Solitons with Non-Zero Velocities Emerging from Real Symmetric Initial Conditions, *M. Desaix, D. Anderson, M. Lisak.*
- 10.20 A Numerical Approach to the Kernel Condition of a Linearized Pseudo-Relativistic Hartree Equation, *B. L. G. Jonsson.*
- 10.40 Delta-Shock Waves in Multidimensional Systems of Conservation Laws,
V. M. Shelkovich.
- 11.00 Two-Waves Interaction in a Cylinder,
Alexander Shermenev.
- 11.20 Singular Nonlinear Problem for Self-Similar Solutions to the Boundary Layer Equation, *Nadezhda B. Konyukhova, Alexander I. Sukov.*
- 11.40 Basics of Nonlinear Time Reversal Acoustics,
Claes Hedberg.
- 12.00 Lunch.

19 Quantum phenomena

Friday afternoon, 13 June

Room Wicksell

Chairman: Karl-Fredrik Berggren

- 1.00 *Nature of Streamlines for Berry-type Wave Functions in Open 3D Cavities,
Karl-Fredrik Berggren, Patric Ljung.
- 1.30 On a Singular Stochastic System Related to a Nonlinear Schrödinger Equation,
Astrid Hilbert.
- 1.50 Understanding of Rich Fluctuations in Quantum Transport through Open Chaotic Cavities, *Hiromu Ishio.*
- 2.10 Mathematical Modelling of Quantum Quasiparticles with Position Dependent Mass via Functional Integrals, *Oleg Smolyanov.*
- 2.30 Quantum Maxwell Equations and Distance Effects for Polarization Correlations in Waveguides, *T. Ishiwatari, A. Khrennikov, B. Nilsson, I. V. Volovich.*
- 2.50 Classical Random Electromagnetic Field and its Quantum-Like Representation,
Andrei Khrennikov.
- 3.10 The RVK08/MMWP08 conference closes
Coffee-break.