

**Table 6: Publication and Presentation Activity**

The following list contains all publications based on research funded directly from VINNOVA grant or cash contributions, or indirectly via in kind contributions from Chalmers or companies in Chase. References marked with \* denotes closely related research performed at Chalmers and funded by other projects not counted as in kind

**PhD theses**

- [P1]\* Per Jacobsson, "Shape and material optimization for antenna applications", Chalmers University of Technology, May 2009.
- [P2] Kristian Karlsson, "Embedded Element Patterns in Combination with Circuit Simulations for Multi-Port Antenna Analysis", Chalmers University of Technology, Oct. 2, 2009.
- [P3] Hana Dobsicek Trefna, "Advances in Microwave Hyperthermia Treatment using Time Reversal", Chalmers University of Technology, June 2010.
- [P4]\* Sergio A: Maldonado, "Efficient analysis of 2D antenna arrays using the ASM-MBF method", Royal Institute of Technology (KTH), Stockholm, Sweden, 2011.

**Licentiate theses**

- [L1] Daniel Nyberg, "Limitations on Efficiency, Size and Bandwidth of Small Antennas", Chalmers University of Technology, January 2009.
- [L2] Panagiota Lioliou, "Channel Estimation for Amplify and Forward Relay Networks", Chalmers University of Technology, 2009.
- [L3] Nima Seifi, "Scheduling and Base-Station Cooperation in MIMO Downlink Systems", Chalmers University of Technology, 2009.
- [L4] Xiaoming Chen, "Reverberation Chamber Characterizations for Passive and Active OTA Measurements", Chalmers University of Technology, Oct. 1, 2010.
- [L5] Xuezi Zeng, "Ultra-wideband Time Domain Measurement Systems for Microwave Tomography", Chalmers University of Technology, June 2010.
- [L6] Nima Jamaly, "Spatial Characterization of Multi-element Antennas", Chalmers University of Technology, March 2011.
- [L7] Ashraf Uz Zaman, "Gap Waveguide for High Frequency Microwave Application- Validation of Concept, Filter Design & Packaging Aspects", Chalmers University of Technology, May 2011.
- [L8] Elena Pucci, "Characterization of losses in ridge, groove and microstrip gap waveguides", Oct. 2011.
- [L9] Oscar Talcoth, "Electromagnetic modelling and design of medical implants and devices", Chalmers University of Technology, Dec. 2011.

**Master theses**

- [M1] Sz-Hau Lai, "Experimental study of inaccuracy due to direct coupling during calibration of a reverberation chamber for wireless measurements" April 2009, Chalmers, supervisor: Per-Simon Kildal.
- [M2] Jenny Hilbertsson & Josefina Magnusson, "Simulation and Evaluation of an Active Electrically Scanned Array (AESAs) in Simulink". Master Thesis at the Department of Signals and Systems, Chalmers University of Technology performed at Saab Microwave Systems, Gothenburg, May 2009.
- [M3] Marie Ström, "Design of a broadband antenna element for LTE base station antennas", June 2009 (Project done at Ericsson AB with Henrik Jidhage as supervisor. Examiner: Per-Simon Kildal).
- [M4] T. Ingason and L. Haonan, "Line-of-Sight MIMO for Microwave Links: Adaptive Dual Polarized and Spatially Separated Systems", sponsored by Ericsson and is part of their in kind. July 2009.

- [M5] Zhinan Lin, "Channel Sounding in Reverberation Chamber – Calibration for Measurements of Wireless Devices", July 2009, Chalmers, Supervisor: Per-Simon Kildal.
- [M6] Hongxia Zhu, "EM Characterization of MIMO Systems in Scattering Environment", Chalmers antenna group, Sep. 2009, examiner Prof. Per-Simon Kildal, supervisor PhD student Nima Jamaly.
- [M7] LiYan Zheng, "Experimental investigation of TIS and AFS Receiver Sensitivity", Nov. 2009, Supervisors: Per-Simon Kildal and Xiaoming Chen.
- [M8] Ahmed Hussain, "MATLAB Handbook for the textbook Foundations of Antennas - A Unified Approach", Dec. 2009, examiner Prof. Per-Simon Kildal, supervisors Per-Simon Kildal and Jian Yang.
- [M9] Hai Zhao, Gui Lin, "A Study of Mobile Phone Antenna – Coupling Element Based Structure", University of Gävle, examiner Prof. Claes Beckman, HiG, supervisor Ying Zhinong, Sony Ericsson. The work was sponsored by Sony Ericsson and is part of their in kind. 2009.
- [M10] Wei Wei, "Hat feed realized without dielectric support", The project was done for Arkivator AB. Supervisors: Tomas Östling, Arkivator and Jian Yang, Chalmers. Examiner: Per-Simon Kildal, Chalmers 2009.
- [M11] Johan Gustafsson: "Investigation of MRI Safety related Electrical Properties of Pacemaker Lead Conductors" Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology, EX070/2009 (performed at St. Jude).
- [M12] Karl-Johan Jönsson, "Development of an antenna model for microwave tomography using FDTD", Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology (performed at Medfield).
- [M13] Sebastian Bengtsson and Karl-Erik Kempe, "Development of a microwave device for hemorrhagic stroke diagnostics - Clinical trial and signal processing," Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology (performed at Medfield).
- [M14] Daniel Bernhardsson, "Strategies for improving the image reconstruction in Microwave Tomography," Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology (performed at Medfield).
- [M15] Hamed Barati & Goran Trninić "MMIC based LNA integrated within waveguide adapter at 14 GHz." (Doc. N.: D-G-REP-00269-RSE, Examiner: Gunnar Elgered).
- [M16]\* Guanglei Wang, "Registration of Brain MR Images", Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology, EX097/2009.
- [M17]\* Yan Li, "Registration of Brain MR Images", Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology, EX103/2009.
- [M18] Javier Linares Villuendas, "UltraWide-Band Antenna Array for Microwave Hyperthermia", Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology.
- [M19]\* Gustav Fagerlind, "A PSO Evaluation for Ultra Wide-Band Antenna Optimization", Division of Biomedical Engineering, Department of Signals and Systems, Chalmers University of Technology 2009.
- [M20] Roki Viidik, "Microneurography in conjunction with functional Magnetic Resonance Imaging: Technical Issues and Signal Processing", Master Thesis EX009 / 2010, Department of Signals and Systems, Chalmers University of Technology, Gothenburg, Sweden, April 2010.
- [M21] Mojtaba Zamani Fekri, "Design of power dividers and 180 deg hybrids for use with the Eleven antenna for VLBI2010 and SKA applications", May 2010. Supervisor: Jian Yang, Examiner: Per-Simon Kildal.
- [M22] Navid Aijaz, "Active Throughput Measurements for MIMO WLAN using Reverberation Chamber", May 2010 (Supervisor: Charlie Orlenius, Bluetest AB. Examiner: Per-Simon Kildal).
- [M23] Jaime Pena Berrazueta, "Microwave Hyperthermia treatment: A translation from modeling to treatment", June 2010.

- [M24]\* Peng Zhang, "Evaluation of Automatic Segmentation Techniques for Brain Magnetic Resonance Images," Dissertation for the degree of Master of Science, EX023/2010, Department of Signals and Systems, Chalmers University of Technology, Gothenburg, Sweden, June 2010.
- [M25]\* Koushyar Kowkabzadeh, Evaluations of Tissue Segmentation of Brain MR Images, EX048/2010, August 2010.
- [M26] Lisuai Jing, "System Simulation of Array-Fed Satellite Reflector Antennas", Chalmers S2, Performed at RUAG, Sept. 2010.
- [M27] Didarul Bahar Bhuiyan, "Application of hyperthermia for localized drug release from thermosensitive liposomes", Sept. 2010.
- [M28] Ali Imran Sandhu, "Design of an Orthomode Transducer in Gap Waveguide Technology", Sep. 2010. Project for Arkivator AB. Supervisors: Per-Simon Kildal, Ahmed Kishk.
- [M29] Christian Lötbäck, "Reverberation Chamber Performance and Methods for Estimating the Rician K-factor", Sept 2010 (done at NIST in Boulder, CO. Examiner: Kildal, Supervisor: Kate Remley, NIST).
- [M30] Muhammad Tabish Iftikhar, "EM Characterization of MIMO Terminals in Non-isotropic Multipath Environments", examiner Prof. Per-Simon Kildal, supervisors Prof. Jan Carlsson and PhD student Nima Jamaly. Sep. 2010.
- [M31] Mona Hashemi, "Designing Feeding Network for Multi-band MIMO Antenna", Sponsored by Sony Ericsson, examiner Prof. Per-Simon Kildal, supervisors Prof. Jan Carlsson, Zhinong Ying, SEMC, Thomas Bolin, SEMC and PhD Kristian Karlsson, SP. Sep. 2010.
- [M32] Mikael Håkansson, "Compact isolated mode multi-band antenna system for MIMO applications", Sponsored by Sony Ericsson, examiner Associate professor Mats Gustafsson, LTH, supervisors Zhinong Ying, SEMC, Thomas Bolin, SEMC and PhD Kristian Karlsson, SP. Sep. 2010.
- [M33] Ubaid Mahmood Khan, "Dual Polarized Dielectric Resonator Antennas", Oct. 2010. Project done at Ericsson AB, Supervisors: Ahmed Kishk, Anders Derneryd.
- [M34]\* Anders Torstenson, "Design of 3D Magnetic Sensor Array for Medical Applications", EX075, November 2010.
- [M35] Xuan Guo and Pengtao Song, "Simulation of an LTE Antenna System", Chalmers S2, Performed at Ericsson AB, Nov. 2010.
- [M36] Jacob Hidén Rudander and Ikram E-Khuda, "RFID Measurements in Reverberation Chamber", Dec 2010 (Supervisor: Charlie Orlenius, Bluetest AB. Examiner: Per-Simon Kildal).
- [M37] Sohaib Maalik, "Antenna design for UWB radar detection application," Dec. 2010. Supervisor and Examiner: Jian Yang. Sponsored by IMEGO.
- [M38] Syed Mir Haider Ali Shah, "Comparisons of total isotropic and average fading sensitivities in different reverberation chambers", 2010 (done at NIST in Boulder, CO. Examiner: Kildal).
- [M39] Yinan Yu, "Development of signal processing algorithms for a new ultra-wide band radar system using UWB CMOS chip," Supervisors: Tomas McKelvey and Jian Yang. Examiner: Tomas McKelvey. Sponsored by IMEGO. 2010.
- [M40] Azeem Imtiaz, "Ultra-Wideband Antenna Array For Microwave Hyperthermia", 2010.
- [M41] Bilal Hussain, "Short-Slot Hybrid Coupler in Gap Waveguides at 38 GHz", June 2011. Supervisors: Ashraf UzZaman, Per-Simon Kildal, Tomas Östling at Arkivator AB. Examiner: Per-Simon Kildal.

### Technical reports and book chapters

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- [B2] Viberg, Mats; Lanne, Maria; Lundgren, Astrid: Calibration in Array Processing. Classical and Modern Direction-of-Arrival Estimation, pp. 93-124. ISBN/ISSN: 987-0-12-374524-8. (invited book chapter).

### Innovations

- [I1]\* Per-Simon Kildal, "Waveguides and transmission lines in gaps between parallel conducting surfaces", application No. PCT/EP2009/057743, 22 June 2009.
- [I2]\* A. Kishk, P.-S. Kildal, E. Rajo-Iglesias, "Packaging of active and passive microwave circuits using lid or bed of curved posts", European patent application EP10163740.3, applicant: Kildal Antenn AB, 25 May 2010.
- [I3] P. Lioliou, M. Viberg, and M. Coldrey, "Self-Interference Suppression in Full-Duplex MIMO Relays," submitted to STIFTELSEN CHALMERS INDUSTRIEKNIK, September 2010. Ericsson acquired the patent in late 2011.
- [I4]\* Jian Yang and Ahmed Kishk, "Self-grounded Bow-tie antenna," PCT patent application number PCT/SE2010/1001072-6, applicant: Jian Yang, 2010-11-04.
- [I5]\* Per-Simon Kildal and Jian Yang, "IMPROVED BROADBAND MULTIDIPOLE ANTENNA WITH FREQUENCY-INDEPENDENT RADIATION CHARACTERISTICS", patent application No. PCT/EP2011/061056, 30 June 2011.

### Journal articles

#### 2009

- [J1] M. V. Ivashina, M. Ng Mou Kehn, P.-S. Kildal and R. Maaskant, "Decoupling efficiency of a wideband Vivaldi focal plane array feeding a reflector antenna", IEEE Transactions on Antennas and Propagation, Vol. 57, NO. 2, pp 373-382, Feb. 2009 (Ivashina and Maaskant are with Astron in Netherlands, Ng is with University of Manitoba).
- [J2] U. Carlberg, P.-S. Kildal, J. Carlsson, "Numerical study of position stirring and frequency stirring in loaded reverberation chamber", IEEE Trans. EMC, Vol. 51, No. 1, pp. 12-17, March 2009.
- [J3] A. A. Kishk, P.-S. Kildal, "Modeling of soft and hard surfaces using ideal perfect electric conducting/perfect magnetic conducting strip grids", IET Microwaves, Antennas and Propagation, vol. 3, pp. 296-302, March 2009. (Kishk is with University of Mississippi).
- [J4] M. Ng Mou Kehn, M. V. Ivashina, P.-S. Kildal and R. Maaskant, "Definition of uni-fying decoupling efficiency of different array antennas - case study of dense focal plane array feed for parabolic reflector", AEUE-International Journal of Electronics and Communications, 2009 - Elsevier, available on line 4 June 2009 (Ivashina and Maaskant are with Astron, Ng is with University of Manitoba).
- [J5] A. Valero-Nogueira, E. Alfonso, J. I. Herranz, P.-S. Kildal, "Experimental demonstration of local quasi-TEM gap modes in single-hard-wall waveguides", IEEE Micro-wave and Wireless Components Letters, Vol. 19, No. 9, pp. 536-538, Sept. 2009.
- [J6] A. Yasin, J. Yang, T. Östling, "A novel compact dual band feed for reflector antennas based on choke horn and circular Eleven antenna", IEEE Transactions on Antennas and Propagation, Vol. 17, No. 10, pp. 3300-3302, Oct. 2009.
- [J7] Y. Karandikar, D. Nyberg, N. Jamaly, P.-S. Kildal, "Mode densities in rectangular, cylindrical and spherical cavities in application to the reverberation chamber", IEEE Trans. EMC, Vol. 51, No. 4, pp. 1044-1046, Nov. 2009.
- [J8] K. Karlsson, J. Carlsson, "Circuit Based Optimization of Radiation Characteristics of Single and Multi-Port Antennas", Radioengineering, Vol. 18, No. 4, pp. 438-444, Dec. 2009.

- [J9] E. Rajo-Iglesias, A. Uz Zaman, P.-S. Kildal, "Parallel plate cavity mode suppression in microstrip circuit packages using a lid of nails", *IEEE Microwave and Wireless Components Letters*, Vol. 20, No. 1, pp. 31-33, Dec. 2009.
- [J10] C. Orlenius and M. Andersson, "Repeatable performance measurements of MIMO systems in connected reverberation chambers with controlled keyhole effect", *Radioengineering*, Vol. 18, No. 4, Dec. 2009.
- [J11] A. Fhager, S. K. Padhi, J. Howard, M. Persson, "3D Image Reconstruction in Microwave Tomography using an Efficient FDTD Method," *IEEE Antennas and Wireless Propagations Letter*, Vol. 8, pp. 1353-1356, Dec. 2009.
- [J12] X. Chen, P.-S. Kildal, C. Orlenius, J. Carlsson, "Channel sounding of loaded reverberation chamber for Over-the-Air testing of wireless devices - coherence bandwidth versus average mode bandwidth and delay spread", *IEEE Antennas and Wireless Propagation Letters*, vol. 8, pp. 678-681, 2009.
- [J13] J. Yang, X. Chen, N. Wadefalk, P.-S. Kildal, "Design and realization of a linearly polarized Eleven feed for 1-10 GHz", *IEEE Antennas and Wireless Propagation letters (AWPL)*, Volume 8, pp. 64-68, 2009.
- [J14] P.-S. Kildal, E. Alfonso, A. Valero-Nogueira, E. Rajo-Iglesias, "Local metamaterial-based waveguides in gaps between parallel metal plates", *IEEE Antennas and Wireless Propagation letters (AWPL)*, Volume 8, pp. 84-87, 2009.
- [J15]\* Jacobsson, Per; Rylander, Thomas: "Shape optimization of the total scattering cross section for cylindrical scatterers". *Radio Science*, 44, 2009.
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- [J16] D. Nyberg, P.-S. Kildal, J. Carlsson, "Effects of intrinsic radiation Q on mismatch factor of three types of small antennas: single-resonance, gradual-transition and cascaded-resonance types", *IET Microwaves, Antennas & Propagation*, Vol. 4, No. 1, pp. 83-90, Jan. 2010.
- [J17] O. Quevedo-Teruel, E. Pucci, E. Rajo-Iglesias, 'Compact loaded PIFA for multifre-quency applications', *IEEE Transactions on Antennas and Propagation*, Vol. 58, No. 3, pp. 656-664, March 2010.
- [J18] Jian Yang, "On Conditions for Constant Radiation Characteristics for Log-Periodic Array Antennas", *IEEE Trans. Antennas Propagat.*, vol. 58, no. 5, pp.1521-1526, May 2010.
- [J19] J. Yang, D. Nyberg, J. Yin, "Impedance matrix of a folded dipole pair under Eleven configuration", *IET Microwaves, Antennas & Propagation*, Vol. 4, No. 6, pp. 697-703, June, 2010.
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- [J23] M. Matthaiou, P. de Kerret, G. K. Karagiannidis, and J. A. Nossek, "Mutual information statistics and beamforming performance analysis of optimized LoS MIMO systems," *IEEE Transactions on Communications*, vol. 58, no. 11, pp. 3316-3329, November 2010.
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- [J26] S. P. Skobelev, P.-S. Kildal, "A new type of the quasi-TEM eigenmodes in a rectangular waveguide with one corrugated hard wall", *Progress In Electromagnetics Research, PIER* 102, pp. 143-157, 2010 (Skobelev is with Radiofizika, Moscow).

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- [J28]\* Xia Zhang, X. R. Yan, Johan Liu, Jian Yang, J. Morris, "Design of Printed Monopole Antennas on Liquid Crystal Polymer Substrates", *Journal of Infrared Millimeter and Terahertz Waves*, 31 (4) pp. 469-480, 2010.
- [J29] K. Karlsson, X. Chen, P.-S. Kildal, J. Carlsson, "Doppler Spread in Reverberation Chamber Predicted From Measurements During Step-Wise Stationary Stirring", *IEEE Antennas and Wireless Propagation Letters*, vol.9, pp.497-500, 2010.
- [J30] N. Jamaly, P.-S. Kildal, J. Carlsson, "Compact Formulas for Diversity Gain of Two-Port Antennas", *IEEE Antennas and Wireless Propagation Letters*, Vol. 9, pp. 970-973, 2010.
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- [J34] W.A. Bukhsh, B.L.G. Jonsson, P. Persson, "Element position perturbation for a narrow spot beam with applications to satellite communication antennas", *Progress in Electromagnetic Research*, 104, pp. 283-295, 2010.
- [J35]\* Chung, P. J.; Viberg, Mats; Mecklenbrauker, C. F., "Broadband ML estimation under model order uncertainty", *Signal Processing*, 90 (5) pp. 1350-1356, 2010.
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- [J37]\* Rylander, Thomas; Hashemzadeh, Parham; Viberg, Mats, "Reconstruction of metal protrusion on flat ground plane", *IET Microwaves Antennas & Propagation*, 4 (11) pp. 1746-1755, 2010.
- [J38]\* Hansbo, Peter; Rylander, Thomas: "A linear nonconforming finite element method for Maxwell's equations in two dimensions. Part I: Frequency domain", *Journal of Computational Physics*, 229 (18) pp. 6534-6547, 2010.
- [J39]\* Jacobsson, Per; Rylander, Thomas, "Gradient-based shape optimisation of conformal array antennas", *Iet Microwaves Antennas & Propagation*, 4 (2) pp. 200-209, 2010.
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- [J64]\* R. Maaskant, R. Mittra, and A. Tjihuis, "Multi-level characteristic basis function method (MLCBFM) for the analysis of large antenna arrays", invited journal paper, Radio Science Bulletin, Special Issue on "Computational Electromagnetics for Modeling Large Finite Antenna Arrays", to appear in 2011.
- [J65] X. Chen, P.-S. Kildal, J. Carlsson, "Fast converging measurement of MRC diversity gain in reverberation chamber using covariance-eigenvalue approach", IEICE Transactions on Electronics, Vol. E94-C, No.10, pp.1657-1660. Oct. 2011.
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- [J67] X. Zeng, A. Fhager, P. Linner, Peter; M. Persson, H. Zirath, "Experimental Investigation on the Accuracy of an Ultra-Wideband Time Domain Microwave Tomography System", IEEE Trans. Instrumentation and Measurements, Vol. 60, No. 12, pp. 3939-3949, Dec. 2011.
- [J68] X. Zeng, A. Fhager, P. Linner, Peter; M. Persson, H. Zirath, "Accuracy Evaluation of Ultra-Wideband Time Domain Measurement Systems for Microwave Tomography", IEEE Trans. Antennas Propag., Vol. 59, No. 11, pp. 4279-4285, Nov. 2011.
- [J69] P. S. Kildal, A. Hussain, X. Chen, C. Orlenius, A. Skårbratt, "Threshold Receiver Model for Throughput of Wireless Devices with MIMO and Frequency Diversity Measured in Reverberation Chamber", IEEE Antennas and Propagation Wireless Letters, Vol. 10, pp. 1201-1204, 2011.
- [J70] P.-S. Kildal, C. Orlenius, J. Carlsson, "OTA Measurement Technology Adapted to Antennas and Wireless Devices with MIMO for Use in Multipath Environments with Fading", invited paper to appear in special issue of Proceedings of the IEEE, September 2012.
- [J71] M. Johansson, H. S. Lui, M. Persson, "Performance Evaluation of Phase-Angle Gradient Method for Phase Retrieval based on Low-Frequency amplitude-Only Near-Field Data", Progress in Electromagnetic Research B, Vol. 25, pp. 113-130, 2010.
- [J72] M. Johansson, A. Fhager, H. S. Lui, M. Persson, "Comparison between Two Phase Retrieval Methods for Electromagnetic Source Modeling", Progress in Electromagnetic Research B, Vol. 30, pp 239-253, 2011.
- [J73] M. Johansson, H. S. Lui, J. –C. Bolomey, M. Persson, "Source Modeling using Phaseless Low-Frequency Near-Field Measurements", IEEE Trans. Electromagnetic Compatibility, in press, 2012.
- [J74] H. S. Lui, A. F., M. Persson, "On the Forward Scattering of Microwave Breast Imaging", International Journal of Biomedical Imaging, (Special Issue of "Microwave Imaging and Emerging Applications"), in press, 2012.
- [J75] A. Fhager, M. Gustafsson, S. Nordbo, Image Reconstruction in Microwave Tomography Using a Dielectric Debye Model, IEEE Transactions on Biomedical Engineering , 59 (1) pp. 156 – 166, 2012.

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- [J76] A. U. Zaman, A. Kishk, and P.-S. Kildal, "Narrow-band microwave filter using high Q groove gap waveguide resonators without sidewalls", submitted to IEEE Transactions on Microwave Theory and Techniques, May 2011.
- [J77] E. Pucci, A. U. Zaman, E. Rajo-Iglesias, P.-S. Kildal and A. Kishk, "Study of Q-Factors of Ridge and Groove Gap Waveguide Resonators", submitted to IEEE Transactions on Microwave Theory and Techniques, 28 June 2011.



- [J78] E. Pucci, E. Rajo-Iglesias, P.-S. Kildal, "New Microstrip Gap Waveguide on Mushroom-Type EBG for Packaging of Microwave Components", submitted to IEEE Microwave and Wireless Components Letters, 26 August 2011.
- [J79] X. Chen, P.-S. Kildal, S.-H. Lai, "Estimation of average Rician K-factor and average mode bandwidth in loaded reverberation chamber", submitted to Antennas and Wireless Propagation Letters, August 2011.
- [J80] P.-S. Kildal, X. Chen, C. Orlenius, M. Franzén, C. Lötbäck, "Characterization of Reverberation Chambers for OTA Measurements of Wireless Devices: New Formulations of Channel Matrix and Measurement Uncertainty", submitted to IEEE Transactions on Antennas and Propagation, Sept. 2011.

### Conference papers

#### **COST 2100 7th Management Committee Meeting, 16-18 Feb. 2009, Braunschweig, Germany**

- [C1] J. Welinder, P. Hallbjörner, T. Bolin, Z. Ying, "Multipath Simulator – Over-the-air test equipment"

#### **IVS VLBI2010 Workshop on Future Radio Frequencies and Feeds (FRFF), March 18 - 21, 2009, Wettzell, Germany**

- [C2]\* Per-Simon Kildal, "Characterization of Feeds for Radio Telescopes", invited tutorial.
- [C3]\* Per-Simon Kildal, Jian Yang, Yogesh Karandikar, Niklas Wadefalk, Miroslav Pantaleev, Leif Helldner, "Electrical Design of a Cooled 2-14 GHz Eleven Feed for SKA and VLBI 2010", (the authors are from three different departments at Chalmers, Signals and Systems, Microtechnology and Nanoscience, and Radio and Space Science)
- [C4]\* Jian Yang, "Numerical Optimization of log-Period Antennas by Using Embedded log-periodically Scaled S-Parameters Evaluated from Truncated Arrays"

#### **Eucap 2009, 3rd European Conference on Antennas and Propagation - 23-27 March 2009 in Berlin, Germany**

- [C5] Y. Karandikar, P.-S. Kildal, "X- Ka dual band prime focus feed for satellite earth terminals"
- [C6] J. Yang, P.-S. Kildal, " Optimization of large log-periodic dual-dipole antenna by using genetic algorithm on embedded element in small log-periodic array"
- [C7] N. Jamaly, C. Gomez-Calero, P.-S. Kildal, J. Carlsson, A. Wolfgang, "Study of Excitation on Beam Ports versus Element Ports in Performance Evaluation of Diversity and MIMO Arrays"(Gomez-Calero is from UPM)
- [C8] K. Karlsson, J. Carlsson, "Circuit Based Optimization of Radiation Characteristics of Single and Multi-Port Antennas"
- [C9] P. Persson, M. Coldrey, A. Wolfgang, and P. Bohlin, "Designing and Evaluating an Amplify-and-forward 2 x 2 MIMO Repeater"
- [C10] A. Wolfgang, M. Coldrey, P. Persson, and P. Bohlin, "Advanced Repeaters in Cellular Communication Systems"
- [C11] A. Sorrentino, P.-S. Kildal, E. Pucci, "Accuracy in Reverberation Chamber for Wireless Testing: a Simple Formula for the Number of Independent Samples" (Sorrentino is with University of Naples, Pucci is with University of Siena)
- [C12] X. Chen, P.-S. Kildal, "Accuracy of antenna mismatch factor and input reflection coefficient measured in reverberation chamber"
- [C13] C. Orlenius, M. Andersson, "Repeatable performance measurements of MIMO systems in connected reverberation chambers with control of channel richness" (M. Andersson is with Bluetest AB)
- [C14] X. Chen, P.-S. Kildal, "Theoretical derivation and measurements of the relationship between coherence bandwidth and RMS delay spread in reverberation chamber"
- [C15] S. Skobelev and P.-S. Kildal, "Analysis of global eigenmodes in an oversized rectangular waveguide with a hard surface on one broad wall for planar slot array antenna applications" (Skobelev is with Radiofizika, Moscow)
- [C16] E. Rajo-Iglesias, P.-S. Kildal, "Cut-off bandwidth of metamaterial-based parallel plate gap waveguide with one textured metal pin surface" (Rajo is with Carlos III, Madrid)

- [C17] S. Maci, A. Polemi, P.-S. Kildal, "Dispersion characteristics of a metamaterial-based parallel plate ridge waveguides" (Maci and Polemi are with University of Siena)
- [C18] P.-S. Kildal, "Three Metamaterial-based Gap Waveguides between Parallel Metal Plates for mm/submm Waves"
- [C19] E. Alfonso, P. Kildal, A. Valero, J. I. Herranz, "Numerical analysis of a metamaterial-based ridge gap waveguide with a bed of nails as parallel-plate mode killer" (Alfonso, Valero and Herranz are with UPV)
- [C20] M. Persson, A. Fhager, H. Trefná, X. Zeng, "Broadband microwave based diagnostics and treatment"
- [C21] H. Trefná, P. Togni, J. Vrba, M. Persson, "Design of the Time-Reversal Hyperthermia System"
- [C22] Z. Sipus, P. Klokoc and P.-S. Kildal, "Local wave Green's functions of parallel plate metamaterial-based gap waveguides with one hard wall" (Sipus and Klokoc are with University of Zagreb)

**ICASSP 09, Taipei, Taiwan, April, 2009**

- [C23] P.-S. Kildal, Sz-Hau Lai, X. Chen, "Direct Coupling as a Residual Error Contribution During OTA Measurements of Wireless Devices in Reverberation Chamber"
- [C24]\* Chung, Pei-Jung; Mecklenbräuker, Christoph; Viberg, Mats: "Broadband ML estimation under model order uncertainty"

**STM 09, Tucson, USA, 3-7 April, 2009**

- [C25]\* Dobšiček Trefná H., Togni P., Persson, M.: TR-Hyperthermia: a system prototype

**Joint 5th ESA Workshop on Millimetre Wave Technology and Applications and 31st ESA Antenna Workshop "Millimetre and sub-millimetre waves - From technologies to systems", 18 - 20 May 2009, ESTEC, Noordwijk, The Netherlands**

- [C26] P.-S. Kildal, E. Rajo-Iglesias, Z. Sipus, S. Skobelev, S. Maci, A. Valero, "Challenges When Developing the New Wideband Metamaterial EBG-based Gap Waveguide Technology for Millimeter and Submillimeter Wave Applications"
- [C27] A.U Zaman, E. Rajo-Iglesias, Elena Pucci, P.-S. Kildal, "Design of Transitions and Calibration Kit in New Wideband Metamaterial-based Gap Waveguide Transmission Line Technology For Millimeter and Submillimeter Waves"

**COST 2100 and COST IC0603 ASSIST Joint Workshop and Management Committee Meeting, 18-20 May 2009, Valencia, Spain**

- [C28] J. Carlsson, K. Karlsson, N. Jamaly, P.-S. Kildal, "Analysis and Optimization of Multi-Port Antennas by using Circuit Simulation and Embedded Element Patterns from Full-Wave Simulation"
- [C29] M. Andersson, C. Orlenius, M. Franzén, "Fast, Repeatable and Cost Effective Multi-Antenna Measurements Using Single or Dual Reverberation Chambers"
- [C30] J. Welinder, L. Fast, T. Bolin, L. Manholm, "Towards a low cost over the air performance test method"

**IEEE AP-S International Symposium on Antennas and Propagation, Charleston, USA, June 1-5, 2009**

- [C31] P.-S. Kildal, Sz-Hau Lai, X. Chen, "Direct Coupling as a Residual Error Contribution During OTA Measurements of Wireless Devices in Reverberation Chamber"
- [C32] C. Orlenius, M. Andersson, "Connected reverberation chambers with variable channel rank for measurement of MIMO antenna system performance" (Mats Andersson is with Bluetest AB)
- [C33] E. Rajo-Iglesias, A. Zaman, E. Alfonso, and P.-S. Kildal, "Alternative ridge gap waveguide design using a mushroom-type EBG surface" (Rajo is with Carlos III Univ in Madrd, Alfonso is with Univ of Valencia)
- [C34] E. Alfonso, P.-S. Kildal, A. Valero-Nogueira, M. Baquero, "Study of the characteristic impedance of a ridge Gap waveguide" (Alfonso, valero and Baquero are with Technical University of Valencia)
- [C35]\* S. Padhi, A. Fhager, M. Persson, J. Howard, "Experimental Performances of Antennas for a Proposed Microwave Tomography System Using the Time-Domain Approach"

**URSI National Radio Science Meeting, Charleston, USA, 1-5 June 2009**

- [C36] P.-S. Kildal, E. Rajo-Iglesias, Z. Sipus, S. Skobelev, S. Maci, A. Valero, "Theoretical and experimental challenges when developing the metamaterial EBG-based gap waveguide technology for millimeter and submillimeter wave circuitry"
- [C37] A. Polemi, S. Maci, P.-S. Kildal, "Searching for analytic modal solutions for the gap waveguide"
- [C38]\* P.-S. Kildal, J. Yang, Y. Karandikar, N. Wadefalk, M. Pantaleev, L. Helldner, "Developing a cooled 2-14 GHz Eleven feed for SKA and VLBI 2010"

**ESHO 2009, Verona, Italy, 4-6 June, 2009**

- [C39]\* Dob's'icek Trefn'a H., Togni P., Vrba J., Persson, M.: TR-Hyperthermia system prototype: first phantom experiments.

**The 9th International Conference on Mathematical and Numerical Aspects of Waves Propagation, Pau, France, 15-19 June 2009**

- [C40]\* S. Nordebo, A. Fhager, M. Gustafsson, B. Nilsson, "Applications of the Fisher Information Integral Operator for Inverse Problems"

**IEEE MTT-S International Microwave Symposium, Boston, USA, June, 2009**

- [C41] X. Zeng, A. Fhager, P. Linner, M. Persson and H. Zirath, "Accuracy Evaluation of Time Domain Measurement Systems for Microwave Tomography"

**The 11th International Conference on Electromagnetics in Advanced Applications, ICEAA 2009, Torino, Italy, 14-18 Sep., 2009**

- [C42]\* M. Johansson, Y. Hamnerius, M. Persson, "Work exposure to electromagnetic fields"

**Medicinteknikdagarna 2009, September 28-29, Västerås, Sweden**

- [C43] X. Zeng, A. Fhager, and M. Persson, "Investigations on the System Measurement Uncertainty for Microwave Tomography"
- [C44] O. Talcoth, H-S. Lui, and M. Persson, "Simulation of MRI-induced heating of implanted pacemaker leads"
- [C45] Johansson, Markus; Hamnerius, Yngve; Persson, Mikael: Numerical calculations of fields in humans exposed to electromagnetic sources
- [C46] Lui, Hoi Shun; Persson, Mikael: Patient Specific Electromagnetic Model for Clinical Application
- [C47]\* Dob's'icek Trefn'a H., Togni P., Shiee R., Persson, M.: TR-Hyperthermia system: Preclinical experiments

**RFMTC09, Gävle, 8 October 2009**

- [C48] J. Welinder, L. Fast, T. Bolin, "Measurements of Throughput using the Multipath Simulator"

**COST2100, 29 October, Wien**

- [C49] L. Manholm, "Channel conditions for OTA"

**31st Annual AMTA Symposium, 1-6 Nov. 2009, Salt Lake City, USA**

- [C50] C. Orlenius, M. Andersson, "MIMO Over-The-Air testing of wireless units in reverberation chamber"

**Asilomar Conference on Signals, Systems and Computers, USA, Nov., 2009**

- [C51] P. Lioliou, M. Viberg, and M. Coldrey, "Performance Analysis of Relay Channel Estimation"

**Asia Pacific Microwave Conference, Dec 7-10, 2009, Singapore**

- [C52] Johansson, Markus; Lui, Hoi Shun; Persson, Mikael: Performance Evaluation of Phase Retrieval Method based on Amplitude-Only Near-Field Data

**The Third International Workshop on Computational Advances in Multi-Sensor Adaptive Processing(CAMSAP2009), Dec 13-16 2009, Aruba, Dutch Antilles**

- [C53]\* Nordebo, Sven; Fhager, Andreas; Gustafsson, Mats; Nilsson, Börje: Fisher Information Analysis in Microwave Tomography

**NEWCOM++ - ACoRN Joint Workshop, Barcelona, 2009**

- [C54] A. Wolfgang, M. Coldrey, P. Persson, and P. Bohlin, "Repeaters in Cellular Communication Systems: Measurements and Simulations"

**COST2100, 10th MCM, Athens, Greece, 3-5 Feb. 2010**

- [C55] C. Orlenius, M. Franzén, "Statistical Approach to MIMO OTA Performance Requirements"

- [C56] P.-S. Kildal, "Comparison of Small Antenna Performance in Horizontal 2-D and Isotropic 3-D Environments"
- ITG/IEEE Workshop on Smart Antennas (WSA), Bremen, Germany, Feb., 2010**
- [C57] M. Matthaiou, A. M. Sayeed, J. A. Nossek, "Maximizing LoS MIMO capacity using reconfigurable antenna arrays"
- iWAT2010, International Workshop on Antenna Technology, Lisbon, Portugal, March 1-3, 2010**
- [C58] K. Karlsson, J. Carlsson, "Analysis and Optimization of MIMO Capacity by using Circuit Simulation and Embedded Element Patterns from Full-Wave Simulation"
- [C59] P.-S. Kildal "OTA measurements of wireless stations in reverberation chamber versus anechoic chamber: from accuracy models to testing of MIMO systems", Key-note presentation
- [C60] N. Aijaz, C. Orlenius, M. Franzén, "Active throughput measurements for complete MIMO WLAN systems using dual reverberation chamber technique"
- GigaHertz symposium, Lund, Sweden, March 9-10, 2010**
- [C61] N. Jamaly, J. Carlsson and P.-S. Kildal, "Multipath Emulator for Simulation of Wireless Terminals' Performance"
- [C62] X. Chen, N. Jamaly, J. Carlsson, J. Yang, P.-S. Kildal, A. Hussain, "Comparison of Diversity Gains of Wideband Antennas Measured in Anechoic and Reverberation Chambers"
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Dallas, TX, March, 2010**
- [C63] N. Seifi, T. Ottosson, M. Viberg, M. Coldrey, A. Wolfgang, "An efficient signaling for multi-mode transmission in multi-user MIMO"
- EuCAP 2010 , 4th European Conference on Antennas and Propagation, Barcelona, Spain, April 12-16, 2010**
- [C64] K. Karlsson, J. Carlsson, "Non-Foster Networks for Improvement of Radiation Efficiency and Effective Diversity Gain of a Multi-Port Antenna"
- [C65] N. Jamaly, H. Zhu, P.-S. Kildal, J. Carlsson, "Performance of Directive Multi-element Antennas versus Multi-beam Arrays in MIMO Communication Systems"
- [C66] J. Welinder, L. Fast, T. Bolin, L. Manholm, "The Multipath Simulator for Over the Air Testing"
- [C67] X. Chen, P.-S. Kildal, "Frequency-dependent effects of platform and wall antenna stirring on measurement uncertainty in reverberation chamber"
- [C68] X. Chen, P.-S. Kildal, "Comparison of RMS delay spread and decay time measured in reverberation chamber"
- [C69] A. Uz. Zaman, P.-S. Kildal, M. Ferndahl, A. Kishk, "Validation of ridge gap wave-guide performance using in-house TRL calibration kit"
- [C70] X. Zeng, A. Fhager and M. Persson, "Study on the sensitivity of image reconstruction to the measurement uncertainty in microwave tomography"
- [C71] A. Fhager, H. Trefna, X. Zeng, P. Linner, H. Zirath, J. Stake and M. Persson, "Clinical Diagnostics And Treatment With Electromagnetic Fields"
- [C72] C. Orlenius, N. Aijaz, M. Franzén, "Active MIMO performance measurements in connected reverberation chambers"
- [C73] A.A.H. Azremi, J. Toivanen, T. Laitinen, P. Vainikainen, N. Jamaly, J. Carlsson, P.-S. Kildal, S. Pivnenko, "On Diversity Performance of Two-Element Coupling Element Based Antenna Structure for Mobile Terminal"
- [C74] J. Yang, S. Pivnenko, T. Laitinen, J. Carlsson, X. Chen, "Measurements of Diversity Gain and Radiation Efficiency of the Eleven Antenna by using Different Measurement Techniques"
- [C75] J. Zhang, S. Pivnenko, A. Khatun, T. Laitinen, J. Carlsson, "Characterization of Small Antennas for Hearing Aids by Several Measurement Techniques"
- [C76] A. Fhager, T. McKelvey and M. Persson, "Stroke Detection Using A Broad Band Microwave Antenna System"
- [C77] A. Fhager, A. Romputtal and M. Persson, "Antenna System For Clinical Microwave Tomography"

[C78] Hana Dobsicek Trefna, Paolo Togni, Reza Shiee, Mikael Persson, "Time Reversal System for Microwave Hyperthermia"

[C79] A. Ellgardt and M. Norgren, "Edge element evaluation of tapered-slot elements in phased arrays"

**Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), May 1-7 2010, Stockholm, Sweden**

[C80] O. Talcoth, H-S. Lui, and M. Persson, "Reduction of MR-Induced Pacemaker Lead Heating using Surrogate Model-based Optimization"

**ESHO 2010, Rotterdam, The Netherlands, May 20-22, 2010**

[C81]\* H. Dobsicek Trefna, J. Hellman, P. Togni, M. Persson, "Hot spot management in time reversal hyperthermia"

**IEEE Vehicular Technology Conference (VTC), Taipei, Taiwan, May 2010**

[C82] T. Ingason, H. Liu, M. Coldrey, A. Wolfgang, J. Hansryd, "Impact of frequency selective channels on a line-of-sight MIMO microwave radio link"

[C83] M. Coldrey, P. Persson, T. Hult, A. Wolfgang, "Higher order MIMO outdoor-to-indoor measurements using repeaters"

**IEEE International Conference on Communications (ICC), Cape Town, South Africa, May 2010**

[C84] M. Matthaiou, M. R. McKay, P. J. Smith, J. A. Nossek, "Exact expressions for the condition number distribution of complex Wishart matrices"

[C85] M. Matthaiou, A. Pitarokoilis, J. A. Nossek, "Mutual information statistics of optimized LoS MIMO systems"

**COST2100, TD (10), Aalborg, Denmark, 2-4 June, 2010**

[C86] P. Hallbjörner, J. Welinder, T. Bolin, "Mutual Coupling in Multipath Simulator Antenna Array and its Impact on Measurement Accuracy"

[C87] P.-S. Kildal, A. Hussain, U. Carlberg, J. Carlsson, "On Using Isotropic Multipath as Reference Environment for OTA Performance: Uncertainty due to Convergence of Statistical Expectation when Estimating Ergodic Capacity and Diversity Gain"

[C88] U. Carlberg, P.-S. Kildal, A. Hussain, J. Carlsson, "On Using Isotropic Multipath as Reference Environment for OTA Performance: Raybased Multipath Simulation Tool for Studying Convergence and Uniqueness of Different User related Statistical Expectations when Estimating Ergodic Capacity and Diversity Gain"

**IEEE International Symposium on Antennas and Propagation, Toronto, Canada, 11-17 July 2010**

[C89] A. Fhager, M. Persson, "Towards a clinical prototype for microwave tomography applied for breast cancer detection"

[C90] P.-S. Kildal, N. Jamaly and J. Carlsson, "Performance of Different Theoretical Small Antennas in Isotropic 3-D and Horizontal 2-D Multipath Environments with Application to OTA testing"

[C91] C. Orlenius, "Antenna performance characterization of multi-antenna terminals used in Multiple-Input-Multiple-Output communication systems"

[C92] Hoi-Shun Lui, M. Widmark, G. Strack, Yan Li, M. Persson, "Development of Patient-Specific Breast Electromagnetic Model based on Clinical Magnetic Resonance Images"

[C93] T. Rubaek, V. Zhurbenko, "Calibration of a Microwave Imaging System Using a Known Scatterer"

**International Symposium on Electromagnetic Theory (EMTS), Aug. 16-19, 2010**

[C94] B.L.G. Jonsson, M. Gustafsson, "Limitations on the effective area and bandwidth product for array antennas"

**ICECOM 2010, 20th International Conference on Applied Electromagnetics and Communications, Dubrovnik, Croatia, 20-23 Sep. 2010**

[C95] J. Carlsson, U. Carlberg, A. Hussain, P.-S. Kildal, "About Measurements in Reverberation Chamber and Isotropic Reference Environment"

[C96] U. Carlberg, J. Carlsson, A. Hussain, P.-S. Kildal, "Ray based Multipath Simulation Tool for Studying Convergence and Estimating Ergodic Capacity and Diversity Gain for Antennas with Given Far-Field Functions"

- [C97] A. Hussain, U. Carlberg, J. Carlsson, P.-S. Kildal, "Analysis of Statistical Uncertainties Involved in Estimating Ergodic MIMO Capacity and Diversity Gain in Rayleigh Fading Environment"

**Medicinteknikdagarna 2010, Umeå, Sweden, 6-7 Oct. 2010**

- [C98] O. Talcoth, T. Rylander, Hoi-Shun Lui, M. Persson, "Optimization of sensor placement in magnetic tracking"
- [C99] O. Talcoth, T. Rylander, Hoi-Shun Lui, M. Persson, "MR-induced heating of pacemaker leads: Modeling and simulations"
- [C100] X. Zeng, A. Fhager, P. Linner, M. Persson, H. Zirath, "Comparison between a time domain and a frequency domain system for microwave tomography"
- [C101] C. Weber, Hoi-Shun Lui, M. Hultenmo, G. Strack, M. Persson, "Development of Patient-Specific Electromagnetic Model (PSEM) based on Breast MR images"
- [C102] T. Rubaek, R. N. Dahlbäck, A. Fhager, J. Stake, M. Persson, "Nonlinear THz Imaging for Medical Diagnostics"
- [C103] A. Fhager, M. Persson, "A 3D microwave tomographic system for breast cancer detection"
- [C104] R. Shiee, H. Trefna, M. Persson, "Performance evaluation of the thermal monitoring flat sensor for measuring temperature inside the agar phantom during laboratorial microwave deep hyperthermia"

**Annual Asilomar Conference on Signals, Systems and Computer, Pacific Grove, CA, Nov., 2010**

- [C105] N. Seifi, M. Viberg, R. W. Heath Jr., J. Zhang, M. Coldrey, "Coordinated single-cell vs multi-cell transmission with limited-capacity backhaul"
- [C106] P. Lioliou, M. Viberg, M. Coldrey, F. Athley, "Self-interference suppression in full-duplex MIMO relays"

**Asia Pacific Microwave Conference, Yokohama, Japan, 7-10 Dec., 2010**

- [C107] Hoi-Shun Lui, N. V. Shuley, "On the Polarization of Resonance Based Radar Target Recognition"
- [C108] Hoi-Shun Lui, Hon Tat Hui, M. Persson, "Preliminary Investigations of Mutual Coupling Effect on Near-Field Beam Focusing"

**International symposium on microwaves 2010 (ISM- 10), Bangalore, India, 11-14 Dec., 2010**

- [C109] A. Ellgardt and M. Norgren, "A Study of Edge Elements in Triangular Grid Tapered-Slot Arrays"

**4th International Conference on Signal Processing and Communication Systems, Gold Coast, Australia, 13-15 Dec., 2010**

- [C110] Hoi-Shun Lui, Hon Tat Hui, "Mutual Coupling Compensation of Compact Antenna Array for Direction-of-Arrivals Estimations"
- [C111] G. Wang, Hoi-Shun Lui, M. Persson, "An Efficient Algorithm for Non-Rigid Image Registration"

**The Twelfth antennas and propagation Symposium (APSYM 2010), Cochin, India, 14-16 Dec., 2010**

- [C112]\* A. Ellgardt, "A review of planar array antenna research at KTH"

**IEEE Global Communications Conference (GLOBECOM), Miami, FL, Dec., 2010**

- [C113] P. de Kerret, M. Matthaiou, R. Mathar, J. A. Nossek, "Analytic framework for the mutual information cumulants of different MIMO channels"

**ICASSP 2010**

- [C114] N. Seifi, T. Ottosson, M. Viberg, M. Coldrey, and A. Wolfgang, "An Efficient Signaling for Multi-Mode Transmission in Multi-User MIMO"

**VTC 2010 Spring**

- [C115] T. Ingason, H. Liu, M. Coldrey, A. Wolfgang, and J. Hansryd, "Impact of Frequency Selective Channels on a Line-of-Sight MIMO Microwave Radio Link"
- [C116] M. Coldrey, P. Persson, T. Hult, and A. Wolfgang, "Higher order MIMO outdoor-to-indoor measurements using repeaters"

**ITG/IEEE Workshop of Smart Antennas (WSA), Aachen, Germany, Feb., 2011**

- [C117] C. Mecklenbräuker, M. Matthaiou, M. Viberg, "Eigenbeam transmission over line-of-sight MIMO channels for fixed microwave links"

**IEEE Global Communications Conference (GLOBECOM), Houston, TX, March 2011**

- [C118] M. Matthaiou, C. Zhong, T. Ratnarajah, "Two novel upper bounds on the sum rate of MIMO ZF receivers"

**EuCAP 2011, 5th European Conference on Antennas and Propagation, Rome, Italy, 11-15 April, 2011**

- [C119] X. Chen, P.-S. Kildal, J. Carlsson, "Comparisons of Different Methods to Determine Correlation Applied to Multiport UWB Eleven Antenna"
- [C120] X. Chen, P.-S. Kildal, J. Carlsson, "Spatial Correlations of Incremental Sources in Isotropic Environment such as Reverberation Chamber"
- [C121] X. Chen, P.-S. Kildal, J. Carlsson, "Determination of maximum doppler shift in reverberation chamber using level crossing rate (LCR)"
- [C122] U. Carlberg, P.-S. Kildal, J. Carlsson, "Including embedded element antenna characteristics in winner II channel models and comparison with isotropic propagation environment"
- [C123] A. Hussain, P.-S. Kildal, J. Carlsson, "Uncertainties in estimating ergodic MIMO capacity and diversity gain of multiport antenna systems with different port weights"
- [C124] J. Åsberg, C. Orlenius, J. Byun, S. Park, P.-S. Kildal, "State-of-the-art measurements of LTE terminal antenna performance using reverberation chamber" (Two of the authors are with Samsung Electronics, two with Bluetest AB)
- [C125] C. Lötbäck, M. Franzén, C. Orlenius, "Analysis and improvement of reverberation chamber method for characterization of small and terminal antennas" (The authors are with Bluetest AB, Orlenius is industrial PhD at Chalmers)
- [C126] A. Skårbratt, J. Åsberg, C. Orlenius, "Over-the-air performance testing of wireless terminals by data throughput measurements in reverberation chamber" (The authors are with Bluetest AB, Orlenius is industrial PhD at Chalmers)
- [C127] Y. Yu, S. Maalik, J. Yang, T. McKelvey, K. Malmström, L. Landén, and B. Stoew, "A new UWB radar system using UWB CMOS chip"

**ESHO 2011, Aarhus, Denmark, May 26-28, 2011**

- [C128] H. Dobsicek Trefna, A. Fhager, J. Hellman, M. Persson, "Microwave tomography based thermometry: a feasibility study"

**IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Prague, Czech Republic, May 2011**

- [C129] M. Matthaiou, N. D. Chatzidiamantis, G. K. Karagiannidis, "On the sum rate of ZF detectors over correlated K fading MIMO channels"
- [C130] N. Seifi, M. Matthaiou, M. Viberg, "Coordinated user scheduling and inter-cell interference mitigation for the multi-cell MIMO downlink"

**IEEE AP-S International Symposium and URSI Science Meeting, Spokane, USA, 3-8 July, 2011**

- [C131] X. Chen, P.-S. Kildal, J. Carlsson, "Simple calculation of ergodic capacity of lossless two-port antenna system using only S-parameters – Comparison with common Z-parameter approach"
- [C132] P.J Soh, G.A.E Vandenbosch, X. Chen, P.-S. Kildal, S.L Ooi, "Wearable textile antennas' efficiency characterization using a reverberation chamber"
- [C133] C. S. Lötbäck Patané, C. Orlenius, "LTE MIMO Throughput Measurement Method for Characterization of Multi-Antenna Terminal Performance"

**30:th URSI General Assembly and Scientific Symposium of International Union of Radio Science, (URSI GASS 2011), Istanbul, Augusti 13-20, 2011**

- [C134]\* M. Motevasselian, A. Ellgart, B.L.G. Jonsson, "A Comparison of a Finite and an Infinite Antenna Array with Cylindrical Dielectric Resonator Elements"
- [C135] H.-S. Lui, M. Persson, "Characterization of Radar Targets Based on Ultra Wideband Polarimetric Transient Signatures"
- [C136] X. Zeng, A. Fhager, M. Persson, "Effects of Noise on Tomographic Breast Imaging"
- [C137] T. Rubaek, A. Fhager, P. D. Jensen, J. J. Mohr, M. Persson, "Microwave Imaging for Breast Cancer Detection: Comparison of Tomographic Imaging Algorithms Using Single-Frequency and Time-Domain Data"

- [C138] M. Johansson, H.-S. Lui, A. Fhager, M. Persson, "Electromagnetic Source Modeling Using Phase Retrieval Methods"
- [C139] A. Fhager, J. Koster, T. Rubaek, M. Persson, "Modeling and Reconstruction in a 3D Microwave Imaging System"
- [C140] T. Rubaek, R. N. Dahlback, A. Fhager, J. Stake, M. Persson, "A Single-Channel THz Imaging System for Biomedical Applications"
- [C141] M. Persson, T. McKelvey, A. Fhager, Y. Shirvany, A. Chodorowski, Q. Mahmood, F. Edelevik, M. Thordstein, A. Hedström, M. Elam, "Advances in Neuro Diagnostics Based on Microwave Technology, Transcranial Magnetic Stimulation and EEG Source Localization"
- [C142] H. Dobsicek Trefna, J. Pena de Berrazueta, M. Persson, "Experimental Verification of Time-Reversal Microwave Hyperthermia System"

**International Conference in Electromagnetics in Advanced Applications (ICEAA) 12-16 Sept 2011, Torino, Italy**

- [C143] O. Talcoth, T. Rylander, H. S. Lui, M. Persson, "Monolithic Multi-Scale modelling of MR-Induced Pacemaker Lead Heating"

**1st IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications, Torino, 12-16 September 2011**

- [C144] M. Persson, "UWB in medical diagnostics and treatment"

**VTC 2011 Fall, San Fransisco, CA, September 2011**

- [C145] P. Lioliou, M. Viberg and M. Matthaiou, "Bayesian channel estimation techniques for AF MIMO relaying systems"

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- [C146] O. Talcoth, T. Rylander, H. S. Lui, M. Persson, "MR-induced heating of pacemaker leads: A parameter study of contributing factors based on multi-scale modelling"
- [C147] O. Talcoth, T. Rylander, H. S. Lui, M. Persson, "Optimal measurements in magnetic tracking for organ-positioning during radiotherapy"
- [C148] X. Zeng, A. Fhager, M. Persson, "Influence of noise on breast tumor detection using microwave tomography"
- [C149] H. S. Lui, M. Persson, "Microwave Breast Cancer Detection using Wideband Polarimetric Responses"

**International symposium on antennas and propagation (ISAP2011), Jeju, Korea, October 24-28, 2011**

- [C150]\* A. Ellgardt, B.L.G. Jonsson, "Resonance shift due to edge effects in finite-by-infinite monopole arrays"
- [C151] X. Chen, P.-S. Kildal, J. Carlsson, "Estimation of Average Rician K-factor in Reverberation Chamber"
- [C152] U. Carlberg, P.-S. Kildal, J. Carlsson, "Study of Random Line-of-Sight Caused by Arbitrary User Positions and Orientations with Application to MIMO OTA Measurements of Wireless Devices"
- [C153] A. Hussain, P.-S- Kildal, U. Carlberg, J. Carlsson, "About Random LOS in MIMO Channels with Rician Fading for OTA Tests"

**Inaugural IEEE Swedish Communication Technologies Workshop (Swe-CTW) 2011, Stockholm, October 2011**

- [C154] M. Matthaiou, N. D. Chatzidiamantis, H. A. Suraweera, G. K. Karagiannidis, "Performance analysis of space-time block codes over generalized-K fading MIMO channels"

**ISWCS 2011, Aachen, Germany, 6-9 Nov., 2011**

- [C155] X. Chen, P.-S. Kildal, J. Carlsson, "Measurement Uncertainties of Capacities of Multi-Antenna System in Anechoic Chamber and Reverberation Chamber"

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- [C156] A. Fhager, M. Persson, "A microwave measurement system for stroke detection" Asia Pacific Microwave Conference, Melbourne, Australia, 5-8 December 2011
- [C157] H. -S. Lui, A. Fhager, M. Persson, "Analysis of Forward Scattering Data for Microwave Breast Imaging", Special Session on Microwave Imaging for Biomedical Applications



- [C158] M. Persson, T. McKelvey, A. Fhager, H. S. Lui, Y. Shirvany, A. Chodoroski, Q. Mahmood, F. Edelevik, M. Thordstein, A. Hedström, M. Elam, “Advances in Neuro Diagnostic based on Microwave Technology, Transcranial Magnetic Stimulation and EEG source localization”, Special Session on Microwave Imaging for Biomedical Applications

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<http://www.elektroniknet.de/home/messentesten/produkte/uebersicht/1/hf-messgeraete/p/d/echokammern-eine-revolution-in-der-antennen-messt/> (about Bluetest AB and their revolutionary measurement technology developed at Chalmers).
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