

2013 IEEE International Conference on Ultra-Wideband

(ICUWB 2013)

**Sydney, Australia
15-18 September 2013**



**IEEE Catalog Number: CFP13UWS-POD
ISBN: 978-1-4799-0967-4**

T1: Antennas and Arrays

Two-Layer Butterfly-Shaped Microstrip 4x4 Butler Matrix for Ultra-Wideband Beam-Forming Applications

Osama Haraz (Assiut University, Egypt); Abdel R. Sebak (Concordia University, Canada)
pp. 1-6

A Power Wave Theory of Antennas

Everett Farr (Farr Fields, LC, USA)
pp. 7-12

A Linear IR-UWB MIMO Radar Array

Malihe Zarre Dooghabadi (University of Oslo, Norway); Håkon A. Hjortland (University of Oslo & Novelda AS, Norway); Tor Sverre Lande (University of Oslo, Norway)
pp. 13-19

An Antenna with Small Footprint, Small Volume and Full Ground Plane for UWB Systems

Mian Iqbal (Macquarie University, Australia); Yuehe Ge (Huaqiao University, P.R. China); Karu Esselle (Macquarie University, Australia)
pp. 20-22

The Design and Simulation of a Compact Vivaldi Shaped Partially Dielectric Loaded (VS-PDL) TEM Horn Antenna for UWB Applications

Mustafa İlarslan (Turkish Air Force Academy & Aeronautics & Space Technologies Institute (ASTIN), Turkey); Emre Aydemir (Turkish Air Force Academy, Turkey); Ersin Gose (Indiana University - Purdue University Fort Wayne, USA); Ahmet Turk (Yildiz Technical University, Turkey)
pp. 23-26

Design and Analysis of an Antenna for Batteryless Transcranial Direct Current Stimulation Devices

Md Kamal Hosain (Deakin University, Australia); Abbas Kouzani (Deakin University, Australia); Shapour Jaberzadehc (Monash University, Australia)
pp. 27-30

T2: Ranging, Localization and Positioning

Entropy Based TOA Estimation in IR UWB Ranging With Energy Detection Receiver Under Dense Multipath Environment

Wenyan Liu (National University of Defense Technology, P.R. China); Xiaotao Huang (National University of DefenseTechnology, P.R. China); Tian Jin (National University of Defense Technology, P.R. China); Zhou Zhimin (National University of Defense Technology, P.R. China); Xiangyang Li (National University of Defense Technology, P.R. China)
pp. 31-36

An improved NLOS detection scheme for Hybrid-TOA/AOA-based localization in indoor environments

Manato Horiba (Nagoya Institute of Technology, Japan); Eiji Okamoto (Nagoya Institute of Technology, Japan); Toshiko Shinohara (Daifuku Co., Ltd., Japan); Katsuhiko Matsumura (Daifuku Co., Ltd., Japan)
pp. 37-42

An Experimental Study of UWB Device-Free Person Detection and Ranging

Yakup Kilic (University of Twente & University of Twente, The Netherlands); Henk Wymeersch (Chalmers University of Technology, Sweden); Arjan Meijerink (University of Twente, The Netherlands); Mark J. Bentum (University of Twente, The Netherlands); William G. Scanlon (Queen's University Belfast & University of Twente, United Kingdom)
pp. 43-48

Multi-Target Localization of Breathing Humans

ChangKyeong Kim (Handong University, Korea); Joon-Yong Lee (Handong University, Korea); Taechong Cho (GIST, Korea); Dongbok Ki (Handong University, Korea); Bong Ho Cho (Handong Global University, Korea); Jihoon Yoon (Hyundai Mobis, Korea)
pp. 49-54

Assessment of Direct Positioning for IR-UWB in IEEE 802.15.4a Channels

Monica Navarro (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Pau Closas (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Montse Nájar (UPC, Spain)
pp. 55-60

Application of Time Reversal for TOA Estimation in UWB Ranging under Dense Multipath Channel

Hong Ding (National University of Defense Technology, P.R. China); Wenyan Liu (National University of Defense Technology, P.R. China); Linhua Zheng (National University of Defense Technology, P.R. China); Xiaotao Huang (National University of DefenseTechnology, P.R. China)
pp. 61-65

T3: UWB Applications

Estimation of Multi-Component Mixture Proportions using Regression Machine Analysis of Ultra-Wideband Spectroscopic Measurements

Stuart Gibbs (Baylor University, USA); Matthew Gardner (Baylor University, USA); Brandon Herrera (Baylor University, USA); Chris Faulkner (Baylor University, USA); Adam Parks (Baylor University, USA); Josh Daniliuc (Baylor University, USA); Paul Hodge (Baylor University, USA); Buford Randall Jean (Baylor University, USA); Robert J. Marks (Baylor University, USA)
pp. 66-71

The Ultra Wideband Capsule Endoscope

Raúl Chávez-Santiago (Oslo University Hospital, Norway); Jianqing Wang (Nagoya Institute of Technology, Japan); Ilangko Balasingham (Norwegian University of Science & Technology & Oslo University Hospital, Norway)
pp. 72-78

Electromagnetic Power Absorption of the Human Abdomen from IR-UWB Based Wireless Capsule Endoscopy Devices

Kasun Thotahewa (Monash University, Australia); Jean-Michel Redouté (Monash University, Australia); Mehmet Rasit Yuce (Monash University, Australia)
pp. 79-84

60-GHz Ultra-WideBand Radio-Over-Fiber System Employing SCM/WDM

Xiaoan Huang (Yokohama National University, Japan); Ryuji Kohno (Yokohama National University, Japan)
pp. 85-90

UWB Antenna Built into 3G Smartphones

Fukuro Koshiji (Kokushikan University, Japan); Yusuke Akiyama (Kokushikan University, Japan); Kohji Koshiji (Tokyo University of Science, Japan)
pp. 91-96

Energy-Efficient Cooperative Relay Selection for UWB Based Body Area Networks

Jie Ding (Macquarie University, Australia); Eryk Dutkiewicz (Macquarie University, Australia); Xiaojing Huang (CSIRO Computational Informatics, Australia); Gengfa Fang (Macquarie University, Australia)
pp. 97-102

W1: Imaging and Radar - I

Modified wall clutter mitigation by PCA and varimax norm in UWB through-wall-imaging

Sun Xin (National University of Defence Technology, P.R. China); Zhang Lanzi (National University of Defence Technology, P.R. China); Lu Biying (National University of Defence Technology, P.R. China); Tian Jin (National University of Defense Technology, P.R. China); Zhou Zhimin (National University of Defence Technology, P.R. China)
pp. 103-108

3D Imaging of a Manmade Target with Weak Scattering Centres by Means of UWB-Radar

Rahmi Salman (University Duisburg-Essen, Germany); Ingolf Willms (University Duisburg-Essen, Germany); Takuya Sakamoto (Kyoto University, Japan); Toru Sato (Kyoto University, Japan); Alexander Yarovoy (Delft University of Technology, The Netherlands)
pp. 109-112

On Buried Weapon Detection by Means of Scattering Matrix Decomposition for Quad-Polarized Ultra-Wideband Radar

Rahmi Salman (University Duisburg-Essen, Germany); Ingolf Willms (University Duisburg-Essen, Germany); Lars Reichardt (Karlsruhe Institute of Technology, Germany); Thomas Zwick (Karlsruhe Institute of Technology (KIT), Germany); Werner Wiesbeck (Karlsruhe Institute of Technology, Germany); Reiner S. Thomä (Ilmenau University of Technology, Germany)
pp. 113-119

Effect of State Space Partitioning on Bayesian Tracking for UWB Radar Sensor Networks

Bita Sobhani (University of Bologna & Department of Electrical, Electronic, and Information Engineering (DEI), CNIT, Italy); Matteo Mazzotti (University of Bologna, Italy); Enrico Paolini (University of Bologna, Italy); Andrea Giorgetti (University of Bologna, Italy); Marco Chiani (University of Bologna, Italy)
pp. 120-125

Moving Human Target CFAR Detection along Slow-Time Profile in Ultrawide Band Through-Wall Radar

Jun Hu (National University of Defense Technology, P.R. China); Zhenlong Yuan (National University of Defense Technology, P.R. China); Guofu Zhu (National University of Defense Technology, P.R. China); Liang Wang (National University of Defense Technology, P.R. China); Xiaotao Huang (National University of DefenseTechnology, P.R. China)
pp. 126-129

The Clutter Suppression Based on Statistical Techniques in TWI Application

Zhang Lanzi (National University of Denfence Technology, P.R. China); Lu Biying (National University of Denfence Technology, P.R. China); Zhou Zhimin (National University of Denfence Technology, P.R. China); Sun Xin (National University of Denfence Technology, P.R. China)
pp. 130-135

W2: UWB Signal Processing - I

A Study on Cooperative Detection Scheme based on Combination for Cognitive Radio Systems

Masahiro Fujii (Utsunomiya University, Japan); Hiroyuki Hatano (Utsunomiya University, Japan); Yu Watanabe (Utsunomiya University, Japan)
pp. 136-141

Detecting UWB Signals Using Cyclic Features

Yiyin Wang (Shanghai Jiao Tong University, P.R. China); Xiaoli Ma (Georgia Institute of Technology, USA); Qi Zhou (Georgia Institute of Technology, USA)
pp. 142-147

Pilot Symbols Distribution for Compressive Sensing Based NBI Mitigation in UWB Systems

Saleh Alawsh (KFUPM, Saudi Arabia); Ali H Muqaibel (KFUPM, Saudi Arabia)
pp. 148-153

Performance of CM-TR UWB Communication System in the Presence of a Single Narrow Band Interferer

Weikai Xu (Xiamen University, P.R. China); Zhixiong Chen (Xiaman University, P.R. China); Lin Wang (Xiamen University, P.R. China)
pp. 154-158

Transmit Antenna Subset Selection with Power Balancing for High Data Rate MIMO-OFDM UWB Systems

Ngoc Phuc Le (University of Wollongong, Australia); Le Chung Tran (University of Wollongong, Australia); Farzad Safaei (ICT Research Institute, University of Wollongong, Australia)
pp. 159-164

W3: Hardware Architecture and Implementation

High-Band Ultra-Wideband Transmitter for IEEE 802.15.4a standard

Denys Martynenko (IHP, Germany); Gunter Fischer (IHP, Germany); Oleksiy Klymenko (IHP, Germany); Dan Kreiser (IHP, Germany); Olonbayar Sonom (IHP, Germany)
pp. 165-169

High Output Dynamic UWB Pulse Generator for BPSK Modulations

Eloi Muhr (IM2NP, France); Remy Vauche (ISEN - IM2NP, France); Sylvain Bourdel (L2MP, France); Jean Gaubert (L2MP, France); Oswaldo Ramos Sparrow (IM2NP, France); Nicolas Dehaese (University of Aix-Marseille III, France); Ines Benamor (IM2NP, France); Herve Barthelemy (Ecole Polytechnique Universitaire de Marseille, France)
pp. 170-174

An Inductorless CMOS UWB Pulse Generator with Active Pulse Shaping Circuit

Sylvain Bourdel (Aix Marseille University & IM2NP, France); Remy Vauche (ISEN - IM2NP, France); Oswaldo Ramos Sparrow (IM2NP, France); Eloi Muhr (IM2NP, France); Jean Gaubert (IM2NP, France); Nicolas Dehaese (University of Aix-Marseille III, France); Herve Barthelemy (Ecole Polytechnique Universitaire de Marseille, France)
pp. 175-179

A K-band UWB Receiver Front-End with passive mixer in 90 nm CMOS

Kristian Kjelgård (University of Oslo, Norway); Tor Sverre Lande (University of Oslo, Norway)
pp. 180-183

Dielectric Waveguide with Planar Multi-Mode Excitation for High Data-Rate Chip-to-Chip Interconnects

Nemat Dolatsha (ETHZ University & Stanford University, USA); Amin Arbabian (Center for Integrated Systems, Stanford University, USA)
pp. 184-188

Analysis of the IEEE 802.15.4a UWB PHY layer for optimizing the power consumption of the transmitter

Pascal Losco (Aix-Marseille University, France); Sylvain Bourdel (Aix Marseille University & IM2NP, France); Jean Gaubert (IM2NP, France); Nicolas Dehaese (University of Aix-Marseille III, France); Stephane Meillère (IM2NP, France); Oswaldo Ramos Sparrow (IM2NP, France); Remy Vauche (ISEN - IM2NP, France); Herve Barthelemy (Ecole Polytechnique Universitaire de Marseille, France)
pp. 189-194

W4: Imaging and Radar - II

Quasi-Wavefront Selection Algorithm for Fast and Accurate Ultra-Wideband Imaging with Polar Revised Range Point Migration

Takuya Sakamoto (Kyoto University, Japan); Toru Sato (Kyoto University, Japan); Rahmi Salman (University Duisburg-Essen, Germany); Ingolf Willms (University Duisburg-Essen, Germany); Alexander Yarovoy (Delft University of Technology, The Netherlands)
pp. 195-200

Ultra-Wideband Synthetic Aperture Radar Landmine Detection Based on Landmine-Enhanced Imaging

Fulai Liang (National University of Defense Technology, P.R. China); Qian Song (National University of DefenseTechnology, P.R. China); Yuming Wang (National University of DefenseTechnology, P.R. China); Hanhua Zhang (National University of DefenseTechnology, P.R. China); Zhou Zhimin (National University of Denfence Technology, P.R. China)
pp. 201-204

Fast Time-Domain Focussing for General Bistatic Low Frequency Ultra Wide Band SAR in Elliptical Polar Coordinate

Hongtu Xie (National University of Defense Technology, P.R. China); Daoxiang An (National University of Defense Technology, P.R. China); Leping Chen (National University of Defense Technology, P.R. China); Xiaotao Huang (National University of DefenseTechnology, P.R. China); Zhimin Zhou (National University of Defense Technology, P.R. China)
pp. 205-210

Study on Timing Jitter in Clutter Mitigation of Through-Wall Human Indication

Jun Hu (National University of Defense Technology, P.R. China); Guofu Zhu (National University of Defense Technology, P.R. China); Jin Tian (National University of Defense Technology, P.R. China); Liang Wang (National University of Defense Technology, P.R. China); Zhou Zhimin (National University of Defense Technology, P.R. China)
pp. 211-214

A Multipath Suppression Technique for Through-the-wall Radar

Jian Wang (National University of Defense Technology, P.R. China); Pengyu Wang (National University of Defense Technology, P.R. China); Yanghuan Li (National University of Defense Technology, P.R. China); Qian Song (National University of Defense Technology, P.R. China); Zhimin Zhou (National University of Defense Technology, P.R. China)
pp. 215-220

UWB Multi-Channel M-Sequence System for Moisture Measurements

Henning Mextorf (University of Kiel, Germany); Christoph Plüscké (University of Kiel, Germany); Frank Daschner (University of Kiel, Germany); Mike Kent (University of Kiel, Germany); Reinhard Knöchel (CAU Kiel, Germany)
pp. 221-225

W5: UWB Signal Processing - II

Exploration and Performance Evaluation of a Compressed Sensing Based IR-UWB Receiver

Qin Zhou (KTH Royal Institute of Technology, Sweden); Zhuo Zou (KTH-The Royal Institute of Technology, Sweden); Hannu Tenhunen (University of Turku, Finland); Li-Rong Zheng (Royal Institute of Technology (KTH), Sweden)
pp. 226-230

Performance and implementation of a multirate IR-UWB Baseband transceiver for IEEE802.15.4a

Olonbayar Sonom (IHP, Germany); Dan Kreiser (IHP, Germany); Rolf Kraemer (IHP Microelectronics, Frankfurt/Oder, Germany)
pp. 231-237

Maximum Likelihood Detectors for Generalized Code-Multiplexing Ultra-Wideband Systems

Hyunwoo Cho (Georgia Institution of Technology, USA); Qi Zhou (Georgia Institute of Technology, USA); Xiaoli Ma (Georgia Institute of Technology, USA)
pp. 238-242

Performance of Joint Channel and Physical Network Coding Based on Alamouti STBC

Yi Fang (Xiamen University, P.R. China); Lin Wang (Xiamen University, P.R. China); Kai Kit Wong (University College London, United Kingdom); Kin-Fai Tong (UCL, University of London, United Kingdom)
pp. 243-248

Iterative RAKE Reception Scheme Using Multi-carrier Pulse for Pulse Based UWB system

Kohei Ohno (Meiji University, Japan); Makoto Itami (Tokyo University of Science, Japan); Tetsushi Ikegami (Meiji University, Japan)
pp. 249-254

Error Probability of OFDM-based Hybrid Relay Protocols Over Wideband Fading Channels

Ibrahim Sileh (USQ, Australia); Wei Xiang (University of Southern Queenslan, Australia); Andrew Maxwell (University of Southern Queensland, Australia)
pp. 255-260

Time Reversal Beamforming in MISO-UWB Channels

Guido C Ferrante (Sapienza University of Rome, Italy); Jocelyn Fiorina (SUPELEC, France); Maria Gabriella Di Benedetto (University of Rome La Sapienza Italy, Italy)
pp. 261-266

W6: RF Modules, Circuits and Systems

CMOS Ultra-Wideband Low Noise Amplifier (UWB-LNA) Using Symmetric 3D RF Integrated Inductor

Khalil Ismail Khalil Yousef (Egypt-Japan University of Science and Technology, Egypt); Hongting Jia (E-JUST Center, Kyushu University, Japan); Ramesh K Pokharel (Kyushu University, Japan); Ahmed Allam (Egypt-Japan University of Science and Technology, Egypt); Mohamed E. Ragab (Egypt-Japan University of Science and Technology, Egypt); Haruichi Kanaya (Kyushu University, Japan); Keiji Yoshida (Kyushu University, Japan)
pp. 267-269

IR-UWB Single-Chip Transceiver for High-Band Operation compliant to IEEE 802.15.4a

Gunter Fischer (IHP, Germany); Denys Martynenko (IHP, Germany); Oleksiy Klymenko (IHP, Germany); Olonbayar Sonom (IHP, Germany); Dan Kreiser (IHP, Germany); Johannes Digel (Universität Stuttgart, Germany); Michelangelo Masini (Universität Stuttgart, Germany); Markus Groeizing (University of Stuttgart, Germany); Rolf Kraemer (IHP Microelectronics, Frankfurt/Oder, Germany)
pp. 270-277

A 3GHz Low Power, MOS Varactor Voltage Controlled Oscillator for Implantable Ultra Wideband Applications in CMOS Silicon-On- Sapphire (SOS) Process

Ayobami Iji (Macquarie University, Australia); Michael Heimlich (Macquarie University, Australia); Xi Zhu (Macquarie University, Australia)
pp. 278-281

A Continuous-Time Differential Single-Bit Quantizer for IR-UWB Receivers

Tuan Anh Vu (University of Oslo, Norway); Tor Sverre Lande (University of Oslo, Norway)
pp. 282-285

A 40 GHz CMOS Transceiver and Radio Front-End for the Customer Premise Equipment Unit of a Radio-over-Fiber System

Nazif E Farid (TM Research and Development, Malaysia); Anurag Nigam (NatTel Microsystem Pvt. Ltd., India); Siti Amalina Enche Ab Rahim (TM Research & Development SDN BHD, Malaysia); Siti Maisurah Mohd Hassan (TMRND Sdn. Bhd., Malaysia); Rasidah Sanusi (TM Research & Development Sdn. Bhd., Malaysia); Ahmad Ismat Abdul Rahim (Telekom Research & Development Sdn Bhd, Malaysia)
pp. 286-291

Modified Compressive Sensing Based Receiver for Impulse Radio Communications in UWB Channels

Qi Zhang (Sun Yat-Sen University, P.R. China); JiaYin Qin (Sun Yat-Sen University, P.R. China); Arumugam Nallanathan (King's College London, United Kingdom)
pp. 292-296