

# **2019 IEEE 30th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC 2019)**

**Istanbul, Turkey  
8 – 11 September 2019**

**Pages 1-558**



**IEEE Catalog Number: CFP19PIM-POD  
ISBN: 978-1-5386-8111-4**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP19PIM-POD
ISBN (Print-On-Demand):	978-1-5386-8111-4
ISBN (Online):	978-1-5386-8110-7
ISSN:	2166-9570

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

<b>DEDICATED SUB-GRANTING RADIO RESOURCE IN OVERLAY D2D COMMUNICATION</b> .....	1
<i>Dariush M. Soleymani ; Mohammad Reza Gholami ; Jens Mueckenheim ; Andreas Mitschele-Thiel</i>	
<b>ACO-OFDM TRANSMISSION OVER UNDERWATER PIPELINE FOR VLC-BASED SYSTEMS</b> .....	8
<i>Sezer Can Tokgoz ; Rubén Boluda-Ruiz ; Serhan Yarkan ; Khalid A. Qaraqe</i>	
<b>EVALUATION, MODELING AND OPTIMIZATION OF COVERAGE ENHANCEMENT METHODS OF NB-IOT</b> .....	15
<i>Sahithya Ravi ; Pouria Zand ; Mohieddine El Soussi ; Majid Nabi</i>	
<b>JOINT PRECODING OPTIMIZATION FOR SECURE TRANSMISSION IN DOWNLINK MISO-NOMA NETWORKS</b> .....	22
<i>Dongdong Lit ; Nan Zhao ; Yunfei Chen ; Arumugam Nallanathan ; Zhiguo Ding ; Mohamed-Slim Alouini</i>	
<b>IMPACT OF CHANNEL ESTIMATION ERRORS ON THE CAPACITY OF SPACE MODULATION TECHNIQUES</b> .....	28
<i>Raed Mesleh ; Abdelhamid Younis</i>	
<b>ESTIMATING QUALITY OF SERVICE ON WI-FI STATIONS USING RECURRENT NEURAL NETWORKS</b> .....	34
<i>Henrique Moura ; Matheus Nunes ; Gilson Miranda ; Daniel F. Macedo ; Luiz H. A. Correia</i>	
<b>SECRECYPERFORMANCE OF ANTENNA-SELECTION-AIDED MIMOME CHANNELS WITH BPSK/QPSK MODULATIONS</b> .....	40
<i>Chongjun Ouyang ; Zeliang Ou ; Pei Yang ; Lu Zhang ; Xin Zhang ; Hongwen Yang</i>	
<b>COOPERATIVE RELAY BASED ON MACHINE LEARNING FOR ENHANCING PHYSICAL LAYER SECURITY</b> .....	46
<i>Jintao Xing ; Tiejun Lv ; Xuwei Zhang</i>	
<b>RATE ANALYSIS OF SC-FDE AND OFDM SYSTEMS WITH LOW RESOLUTION ADCS</b> .....	52
<i>Mohammad Soleymani ; Behrouz Maham</i>	
<b>PROBABILISTIC PREAMBLE SELECTION WITH REINFORCEMENT LEARNING FOR MASSIVE MACHINE TYPE COMMUNICATION (MTC) DEVICES</b> .....	57
<i>Galini Tsoukaneri ; Shangbin Wu ; Yue Wang</i>	
<b>INVESTIGATIONS ON MASSIVE MIMO PERFORMANCE WITH MULTI-ANTENNA USERS BY RAY-TRACING</b> .....	63
<i>Mehmet Mert Taygur ; Thomas F. Eibert</i>	
<b>UTILITY-FAIR WIRELESS RESOURCE ALLOCATION FOR HETEROGENEOUS USERS</b> .....	69
<i>Poonam Lohan ; Jun-Bae Seo ; Swades De</i>	
<b>PAPR REDUCTION FOR CARRIER AGGREGATED OFDM SIGNALS BASED ON A LOW COMPLEXITY SEQUENCE ALIGNMENT SCHEME</b> .....	74
<i>Mariam Issa ; Abdel-Karim Ajami ; Hassan Artail</i>	
<b>DOUBLY ITERATIVE TURBO EQUALIZATION: OPTIMIZATION THROUGH DEEP UNFOLDING</b> .....	80
<i>Serdar Sahin ; Charly Poulliat ; Antonio Maria Cipriano ; Marie-Laure Boucheret</i>	
<b>SECURING NON-ORTHOGONAL MULTIPLE ACCESS SYSTEMS AGAINST SIMULTANEOUS EAVESDROPPING ATTACKS COMING FROM INSIDE AND OUTSIDE OF THE NETWORK</b> .....	86
<i>Gustavo Anjos ; Daniel Castanheira ; Adão Silva ; Atílio Gameiro</i>	
<b>LPWA DEPLOYMENT FOR FACTORY OF THE FUTURE: LORA OR TURBO-FSK BASED TECHNOLOGY?</b> .....	93
<i>Arturo Guizar ; Moises Nunez Ochoa ; Valerian Mannoni ; Mickael Maman</i>	
<b>PERFORMANCE-COMPLEXITY TRADEOFFS OF MIMO-NOMA RECEIVERS TOWARDS GREEN WIRELESS NETWORKS</b> .....	99
<i>Walid A. Al-Hussaiibi ; Falah H. Ali</i>	
<b>MULTIDIMENSIONAL CONTENT MODELING AND CACHING IN D2D EDGE NETWORKS</b> .....	105
<i>S. Sinem Kafiloglu ; Gürkan Gür ; Fatih Alagöz</i>	
<b>PARTIAL ACCESS FOR LDPC-CODED-IDMA SYSTEMS</b> .....	111
<i>Akira Osamura ; Guanghui Song ; Tomotaka Kimura ; Jun Cheng</i>	
<b>EFFICIENT UPLINK MULTI-BEAM INITIAL ACCESS SCHEME FOR INACTIVE USERS IN MMWAVE NETWORKS</b> .....	117
<i>Chong Gao ; Hongtao Zhang ; Yachao Liang ; Peng Hao</i>	
<b>TASK SCHEDULING BASED ON PRIORITY AND RESOURCE ALLOCATION IN MULTI-USER MULTI-TASK MOBILE EDGE COMPUTING SYSTEM</b> .....	123
<i>Pouria Paymard ; Nader Mokari ; Mehdi Orooji</i>	

<b>OPTIMAL RESOURCE ALLOCATION FOR NOMA-ENABLED CACHE REPLACEMENT AND CONTENT DELIVERY .....</b>	<b>130</b>
<i>Lei Lei ; Thang X. Vu ; Lin Xiang ; Xingjun Zhang ; Symeon Chatzinotas ; Björn Ottersten</i>	
<b>IMPROVING ULTRA-RELIABLE LOW-LATENCY COMMUNICATION IN MULTIPLEXING WITH ENHANCED MOBILE BROADBAND IN GRANT-FREE RESOURCES .....</b>	<b>136</b>
<i>Trung-Kien Le ; Umer Salim ; Florian Kaltenberger</i>	
<b>GENERALIZED RECEIVE QUADRATURE SPACE MODULATION TECHNIQUES: HARDWARE MODELS AND ANALYSIS .....</b>	<b>142</b>
<i>Omar Hiari ; Raed Mesleh</i>	
<b>PERFORMANCE ANALYSIS OF SPARSE CODE MULTIPLE ACCESS MIMO SYSTEMS.....</b>	<b>148</b>
<i>Salma Elkawafi ; Abdelhamid Younis ; Raed Mesleh</i>	
<b>A HIGH-ACCURACY CONCURRENT PHASE-BASED RANGING FOR LARGE-SCALE DENSE BLE NETWORK.....</b>	<b>154</b>
<i>Pouria Zand ; Ayturk Duzen ; Jac Romme ; Jochem Govers ; Christian Bachmann ; Kathleen Philips</i>	
<b>REDUCING INTERFERENCE BY THREE BIT SCHEDULING INFORMATION IN WIRELESS LOCAL AREA NETWORKS .....</b>	<b>161</b>
<i>J. D. Kim ; D. I. Laurenson ; J. S. Thompson</i>	
<b>CACHING OPTIMIZATION FOR D2D-ASSISTED HETEROGENEOUS WIRELESS NETWORKS.....</b>	<b>167</b>
<i>Wael Jaafar ; Wessam Ajib ; Halima Elbiaze</i>	
<b>REMOTE MONITORING OF IOT SENSORS AND COMMUNICATION LINK QUALITY IN MULTISITE MMTC TESTBED .....</b>	<b>173</b>
<i>Seppo Horsmanheimo ; Joonas Säe ; Tero Jokela ; Lotta Tuomimäki ; Ethiopia Nigussie ; Annemarie Hjelt ; Sami Huilla ; Tahsin Dönmez ; Nicolas Le Bail ; Mikko Valkama</i>	
<b>A MODIFIED SHUFFLING METHOD TO SPLIT THE CRITICAL PATH DELAY IN LAYERED DECODING OF QC-LDPC CODES .....</b>	<b>180</b>
<i>Alireza Hasani ; Lukasz Lopacinski ; Steffen Büchner ; Jörg Nolte ; Rolf Kraemer</i>	
<b>ENABLING PROCESS BUS COMMUNICATION FOR DIGITAL SUBSTATIONS USING 5G WIRELESS SYSTEM.....</b>	<b>186</b>
<i>Neha Kumari ; Fedor Chernogorov ; Ikram Ashraf ; Johan Torsner ; Jonas Kronander ; Gustav Wikström ; Subrat Sahoo</i>	
<b>ENERGY-EFFICIENT ROUTING ALGORITHMS FOR UAV-ASSISTED MMTC NETWORKS .....</b>	<b>193</b>
<i>Kaiyu Zhu ; Xiaodong Xu ; Zhihan Huang</i>	
<b>TECHNOLOGY INDEPENDENT SECURITY AWARE OFDM (SA-OFDM).....</b>	<b>199</b>
<i>Monette H. Khadr ; Hany Elgala ; Moussa Ayyash ; Thomas Little ; Michael Rahaim ; Abdallah Khreishah</i>	
<b>AUGMENTED SPATIAL MODULATION (ASM): SECURE AND EFFICIENT IOT COMPATIBLE MIMO BASED VLC LINKS .....</b>	<b>205</b>
<i>Monette H. Khadr ; Hany Elgala</i>	
<b>AN ANALYTICAL COMPARISON OF MU-MIMO AND SINGLE USER TRANSMISSIONS IN IEEE 802.11AC.....</b>	<b>211</b>
<i>Yousri Daldoul ; Djamel-Eddine Meddour ; Adlen Ksentini</i>	
<b>ESTIMATION AND RESERVATION FOR AUTONOMOUS RESOURCE SELECTION IN C-V2X MODE 4.....</b>	<b>217</b>
<i>Saif Sabeeh ; Pawel Sroka ; Krzysztof Wesolowski</i>	
<b>VEHICULAR VISIBLE LIGHT POSITIONING WITH A SINGLE RECEIVER .....</b>	<b>223</b>
<i>Burak Soner ; Sinem Coleri Ergen</i>	
<b>GRID ADAPTIVE SPARSE BAYESIAN LEARNING FOR 2D-DOA ESTIMATION WITH L-SHAPE ARRAY .....</b>	<b>229</b>
<i>Dan Wang ; Kangyong You ; Peiliang Zuo ; Yue Wang ; Wenbin Guo ; Tao Peng</i>	
<b>ENABLING NB-IOT ON UNLICENSED SPECTRUM.....</b>	<b>235</b>
<i>Rongrong Sun ; Salvatore Talarico ; Wenting Chang ; Huaning Niu ; Hongwen Yang</i>	
<b>MEASUREMENT AND MODELING OF PROPAGATION CHARACTERISTICS FOR AN INDOOR ENVIRONMENT IN THE 28 GHZ-BAND .....</b>	<b>242</b>
<i>Satoshi Ito ; Takahiro Hayashi ; Kosuke Yamazaki ; Masahiko Nakao ; Seiichiro Sakai ; Yoko Kurosawa ; Akira Matsunaga ; Kyohiro Yoshida</i>	
<b>DELAY ESTIMATION OF UAV COMMUNICATIONS BASED ON FOUNTAIN CODES .....</b>	<b>248</b>
<i>Jin Shang ; Wenjun Xu ; Chia-Han Lee ; Xin Yuan ; Ping Zhang ; Jiaru Lin</i>	
<b>ROBUST SPATIO-TEMPORAL PARTIAL-RESPONSE SIGNALING OVER A FREQUENCY-SELECTIVE FADING MIMO CHANNEL WITH IMPERFECT CSI .....</b>	<b>254</b>
<i>Jelle Baillleul ; Lennert Jacobs ; Mamoun Guenach ; Marc Moeneclaey</i>	

<b>GRADIENT PURSUIT-BASED CHANNEL ESTIMATION FOR MMWAVE MASSIVE MIMO SYSTEMS WITH ONE-BIT ADCS</b> .....	261
<i>In-Soo Kim ; Junil Choi</i>	
<b>PERFORMANCE EVALUATION OF SINGLE BASE STATION TOA-AOA LOCALIZATION IN AN LTE TESTBED</b> .....	267
<i>Alejandro Blanco ; Norbert Ludant ; Pablo Jiménez Mateo ; Zhenyu Shi ; Yi Wang ; Joerg Widmer</i>	
<b>CODE RATE MAXIMIZATION OF COOPERATIVE CACHING IN ULTRA-DENSE NETWORKS</b> .....	273
<i>Salwa Mostafa ; Chi Wan Sung ; Guangping Xu</i>	
<b>PARTIALLY INFORMED TRANSMITTER-BASED SPACE SHIFT KEYING</b> .....	279
<i>Ugrasen Singh ; Manav R. Bhatnagar</i>	
<b>FAULTY DATA DETECTION IN MMTC BASED E-HEALTH DATA COLLECTION NETWORKS</b> .....	286
<i>Yaocang Liang ; Xiaodong Xu ; Shujun Han ; Ziting Zhang ; Yan Sun</i>	
<b>SECURITY EVALUATION WITH AN INDOOR UWB LOCALIZATION OPEN PLATFORM: ACKNOWLEDGMENT ATTACK CASE STUDY</b> .....	292
<i>Baptiste Pestourie ; Vincent Berouille ; Nicolas Fourty</i>	
<b>JOINT NOMA TRANSMISSION IN INDOOR MULTI-CELL VLC NETWORKS</b> .....	299
<i>Virendra Singh Rajput ; D. R. Ashok ; A. Chockalingam</i>	
<b>PERFORMANCE EVALUATION FOR UPLINK MEASUREMENT BASED SMALL CELL SELECTION IN USER-CENTRIC NETWORKS</b> .....	305
<i>Chong Gao ; Hongtao Zhang ; Yachao Liang ; Peng Hao</i>	
<b>NEW COLLISION DETECTION METHOD FOR FAIR LTE-LAA AND WI-FI COEXISTENCE</b> .....	311
<i>Polina Kutsevol ; Vyacheslav Loginov ; Evgeny Khorov ; Andrey Lyakhov</i>	
<b>DERIVING AN EMPIRICAL CHANNEL MODEL FOR WIRELESS INDUSTRIAL INDOOR COMMUNICATIONS</b> .....	317
<i>Andreas Traßl ; Tom Höfler ; Lucas Scheuven ; Norman Franchi ; Gerhard P. Fettweis</i>	
<b>A LOW-COMPLEXITY SOLUTION TO ANGULAR MISALIGNMENTS IN MOLECULAR INDEX MODULATION</b> .....	324
<i>Ahmet Celik ; Mustafa Can Gursoy ; Ertugrul Basar ; Ali Emre Pusane ; Tuna Tugcu</i>	
<b>MULTI-CONNECTIVITY ENABLED USER ASSOCIATION</b> .....	330
<i>Goksel Simsek ; Hande Alemdar ; Ertan Onur</i>	
<b>IDSP: A NEW IDENTITY-BASED SECURITY PROTOCOL FOR CLUSTER-BASED WIRELESS SENSOR NETWORKS</b> .....	336
<i>Fares Mezrag ; Salim Bitam ; Abdelhamid Mellouk</i>	
<b>BEYOND VISUAL LINE OF SIGHT PILOTING OF UAVS USING MILLIMETER-WAVE CELLULAR NETWORKS</b> .....	342
<i>Peng Wang ; Mustafa Ozger ; Cicek Cavdar ; Marina Petrova</i>	
<b>POWER LOSS MINIMIZATION IN MICROGRIDS USING BAYESIAN REINFORCEMENT LEARNING WITH COALITION FORMATION</b> .....	349
<i>Mohammad Sadeghi ; Melike Erol-Kantarci</i>	
<b>A THROUGHPUT FAIRNESS-BASED GROUPING STRATEGY FOR DENSE IEEE 802.11AH NETWORKS</b> .....	355
<i>Hamed Mosavat-Jahromi ; Yue Li ; Lin Cai</i>	
<b>CROSS-LAYER MULTI-USER SELECTION IN 5G HETEROGENEOUS NETWORKS BASED ON HYBRID BEAMFORMING OPTIMIZATION FOR MILLIMETER-WAVE</b> .....	361
<i>Ahmad Fadel ; Ahmad Nimr ; Hsiao - Lan Chiang ; Marwa Chafii ; Bernard Cousin</i>	
<b>JOINT FUNCTIONAL SPLITTING AND CONTENT PLACEMENT FOR GREEN HYBRID CRAN</b> .....	368
<i>Ajay Sriram ; Meysam Masoudi ; Abdulrahman Alabbasi ; Cicek Cavdar</i>	
<b>HEURISTIC ENERGY EFFICIENCY OPTIMIZATION SCHEME FOR MULTI-HOP MMTC NETWORKS</b> .....	375
<i>Huan Gao ; Xiaodong Xu</i>	
<b>LOCAL CONTENT CLOUD BASED COOPERATIVE CACHING PLACEMENT FOR EDGE CACHING</b> .....	381
<i>Shiyu Yang ; Shaoshuai Fan ; Gang Deng ; Hui Tian</i>	
<b>DELAY-AWARE TASK CONGESTION CONTROL AND RESOURCE ALLOCATION IN MOBILE EDGE COMPUTING</b> .....	387
<i>Shichao Li ; Qiuyun Wang ; Yunfeng Wang ; Dengtai Tan ; Wenjie Li</i>	
<b>DETECTION METHOD AGAINST FAKE MESSAGE ATTACKS IN SPARSE MOBILE AD-HOC NETWORKS</b> .....	393
<i>Yuki Shimizu ; Tomotaka Kimura ; Jun Cheng</i>	

<b>MODELLING AND ANALYSIS OF 3-D CELLULAR NETWORKS USING A MATERN CLUSTER PROCESS.....</b>	<b>400</b>
<i>Jiacui Miao ; Xinyu Gu ; Bingxue Leng ; Lei Zhang</i>	
<b>A COMPARATIVE ANALYSIS OF DISTRIBUTED LEDGER TECHNOLOGIES FOR SMART CONTRACT DEVELOPMENT .....</b>	<b>406</b>
<i>Sofiane Benahmed ; Ivan Pidikseev ; Rasheed Hussain ; Jooyoung Lee ; S. M. Ahsan Kazmi ; Alma Oracevic ; Fatima Hussain</i>	
<b>A SECURE OPTIMAL RELAY SELECTION FOR FULL-DUPLEX TWO-WAY RELAY NETWORK WITH TWO-SIDED EAVESDROPPERS .....</b>	<b>412</b>
<i>Fang Liu ; Ting Wang</i>	
<b>OAM BASED WIRELESS COMMUNICATIONS WITH NON-COAXIAL UCA TRANSCEIVER.....</b>	<b>418</b>
<i>Haiyue Jing ; Wenchi Cheng ; Wei Zhang ; Runyu Lyu</i>	
<b>FEEDBACK-AWARE PRECODING FOR MILLIMETER WAVE MASSIVE MIMO SYSTEMS.....</b>	<b>424</b>
<i>Reza Ghanaatian ; Vahid Jamali ; Andreas Burg ; Robert Schober</i>	
<b>ANALYSIS OF HANDOVER PROBABILITY BASED ON EQUIVALENT MODEL FOR 3D UAV NETWORKS.....</b>	<b>431</b>
<i>Wanqing Huang ; Hongtao Zhang ; Mingyu Zhou</i>	
<b>FILTERING FOR UPLINK NON-ORTHOGONAL MULTIPLE ACCESS WITH IMPERFECT RECEIVED POWER CONTROL .....</b>	<b>437</b>
<i>Cagri Goken ; Onur Dizdar ; Alptekin Yilmaz</i>	
<b>STATISTICAL LINEARIZATION OF PHASED ARRAYS USING POWER ADAPTIVE POWER AMPLIFIER MODEL .....</b>	<b>443</b>
<i>Bilal Khan ; Nuutti Tervo ; Aarno Pärssinen ; Markku Juntti</i>	
<b>DECENTRALIZED CLUSTERING AND BEAMFORMING BASED ON INTERFERENCE PRICING IN USER-CENTRIC NETWORKS .....</b>	<b>448</b>
<i>Lingcheng Dai ; Hongtao Zhang ; Zhengzheng Li</i>	
<b>DEEP LEARNING FOR JOINT MIMO DETECTION AND CHANNEL CODING.....</b>	<b>454</b>
<i>Taotao Wang ; Lihao Zhang ; Soung Chang Liew</i>	
<b>MINIMUM LENGTH SCHEDULING FOR POWER CONSTRAINED HARVEST-THEN-TRANSMIT COMMUNICATION NETWORKS .....</b>	<b>461</b>
<i>Elif Dilek Salik ; Aysun Gurur Onalan ; Sinem Coleri Ergen</i>	
<b>THE IMPLEMENTATION OF POSITIONING SYSTEM WITH TRILATERATION OF HAVERSINE DISTANCE.....</b>	<b>467</b>
<i>Huseyin Alkan ; Hasari Celebi</i>	
<b>GROUND BASED SENSE AND AVOID SYSTEM FOR AIR TRAFFIC MANAGEMENT .....</b>	<b>473</b>
<i>Irshad A. Meer ; Mustafa Ozger ; Magnus Lundmark ; Ki Won Sung ; Cicek Cavdar</i>	
<b>AN ENHANCED LORA-LIKE RECEIVER FOR THE SIMULTANEOUS RECEPTION OF TWO INTERFERING SIGNALS.....</b>	<b>479</b>
<i>Baptiste Laporte-Fauret ; Mohamed Amine Ben Temim ; Guillaume Ferre ; Dominique Dallet ; Bryce Minger ; Loic Fuché</i>	
<b>LAS DETECTOR DESIGN FOR LARGE-SCALE MIMO CHANNELS WITH PILOT-AIDED DETECTION .....</b>	<b>485</b>
<i>Chihaoui Issa ; Mohamed Lassaad Ammari ; Jean-Yves Chouinard</i>	
<b>PERFORMANCE ANALYSIS OF USER SCHEDULING IN MASSIVE MIMO WITH FAST MOVING USERS .....</b>	<b>491</b>
<i>Nann Win Moe Thet ; Tuncer Baykas ; Mehmet Kemal Ozdemir</i>	
<b>A 3D BEAMFORMING SCHEME BASED ON THE SPATIAL DISTRIBUTION OF USER LOCATIONS.....</b>	<b>497</b>
<i>Jalal Rachad ; Ridha Nasri ; Laurent Decreusefond</i>	
<b>A UNIFIED BEAMFORMING AND A/D SELF-INTERFERENCE CANCELLATION DESIGN FOR FULL DUPLEX MIMO RADIOS .....</b>	<b>504</b>
<i>Md Atiqul Islam ; George C. Alexandropoulos ; Besma Smida</i>	
<b>ROBUSTNESS OF CLUSTERED D2D CACHE PLACEMENT AGAINST MOBILITY .....</b>	<b>511</b>
<i>Ahmet Cihat Kazez ; Tolga Girici</i>	
<b>IMPACT OF IMPERFECT CHANNEL ESTIMATION IN HF OFDM-MIMO COMMUNICATIONS .....</b>	<b>516</b>
<i>Aris L. Moustakas ; George C. Alexandropoulos ; Andreas Polydoros ; Ioannis Kaddas ; Ioannis Dagres</i>	
<b>COEXISTENCE OF AGE AND THROUGHPUT OPTIMIZING NETWORKS: A GAME THEORETIC APPROACH.....</b>	<b>522</b>
<i>Sneihil Gopal ; Sanjit K. Kaul ; Rakesh Chaturvedi</i>	

<b>INTERFERENCE CANCELLATION IN OVERLAY COGNITIVE RADIO BASED ON OFDM USING NONLINEAR KALMAN-FILTER FOR CHANNEL ESTIMATION.....</b>	<b>528</b>
<i>Ahmed Abdo ; Ali Abdo ; Ali Jamoos</i>	
<b>UTILIZING MOBILE NODES FOR CONGESTION CONTROL IN WIRELESS SENSOR NETWORKS.....</b>	<b>534</b>
<i>Antonia Nicolaou ; Natalie Temene ; Charalampos Sergiou ; Chryssis Georgiou ; Vasos Vassiliou</i>	
<b>TASK SCHEDULING FOR MOBILE EDGE COMPUTING WITH MULTIPLE LINKS .....</b>	<b>541</b>
<i>Lichao Yang ; Heli Zhang ; Hong Ji ; Xi Li</i>	
<b>MODELING AND COVERAGE ANALYSIS OF POWER CONTROL IN USER-CENTRIC UAV NETWORKS.....</b>	<b>547</b>
<i>Wenfei Tang ; Hongtao Zhang ; Mingyu Zhou</i>	
<b>REINFORCEMENT LEARNING-BASED TRAJECTORY DESIGN FOR THE AERIAL BASE STATIONS .....</b>	<b>553</b>
<i>Behzad Khamidehi ; Elvino S. Sousa</i>	
<b>MULTI-CELL PROCESSING AND ARTIFICIAL NOISE FOR SECURE TRANSMISSION IN DOWNLINK MULTI-CELL MIMO SYSTEMS UNDER IMPERFECT CSI.....</b>	<b>559</b>
<i>Juan Bai ; Tao Dong ; Qin Zhang ; Xuefei Zhang ; Yanhong Lin</i>	
<b>AN ENERGY-EFFICIENT CONGESTION CONTROL SCHEME FOR MPTCP IN WIRELESS MULTIMEDIA SENSOR NETWORKS.....</b>	<b>565</b>
<i>Bao Trinh ; Liam Murphy ; Gabriel-Miro Muntean</i>	
<b>SPARSE BAYESIAN LEARNING FOR MULTIPLE SOURCES LOCALIZATION WITH UNKNOWN PROPAGATION PARAMETERS .....</b>	<b>572</b>
<i>Kangyong You ; Wenbin Guo ; Peiliang Zuo ; Yueliang Liu ; Wenbo Wang</i>	
<b>LOW-COMPLEXITY CALIBRATION SCHEME OF CHANNEL RECIPROCITY FOR MASSIVE MIMO-OFDM SYSTEM WITH IQ IMBALANCE.....</b>	<b>578</b>
<i>Jing Sun ; Yan Liang ; Ting Li ; Wei Ji ; Fei Li</i>	
<b>GFDM-MODULATED FULL-DUPLEX COGNITIVE RADIO NETWORKS IN THE PRESENCE OF RF IMPAIRMENTS .....</b>	<b>583</b>
<i>Amirhossein Mohammadian ; Chintha Tellambura</i>	
<b>REINFORCEMENT LEARNING BASED DYNAMIC ENERGY-SAVING ALGORITHM FOR THREE-TIER HETEROGENEOUS NETWORKS.....</b>	<b>589</b>
<i>Hao Sun ; Tiejun Lv ; Xuwei Zhang ; Ziyu Liu</i>	
<b>A NEARLY OPTIMAL HYBRID PRECODER DESIGN FOR DOWNLINK SINGLE-CARRIER WIDEBAND MASSIVE MIMO CHANNELS.....</b>	<b>595</b>
<i>Emre Kilcioglu ; Gokhan M. Guvensen</i>	
<b>BEAM TRAINING OPTIMIZATION IN MILLIMETER-WAVE SYSTEMS UNDER BEAMWIDTH, MODULATION AND CODING CONSTRAINTS.....</b>	<b>602</b>
<i>Shahram Shahsavari ; Mohammad A. Amir Khojastepour ; Elza Erkip</i>	
<b>JOINT OFFLOADING AND COMPUTATION RESOURCE ALLOCATION IN D2D ASSISTED HYBRID FRAMEWORK.....</b>	<b>609</b>
<i>Wei Liu ; Yinglei Teng ; Mengting Liu ; Mei Song</i>	
<b>A NOVEL REINFORCEMENT LEARNING BASED ADAPTIVE OPTIMIZATION OF LTE-TDD CONFIGURATIONS FOR LTE-U/WIFI COEXISTENCE.....</b>	<b>615</b>
<i>Himanshu Kushwaha ; Vijeth J Kotagi ; C. Siva Ram Murthy</i>	
<b>PERFORMANCE OF RADAR AND COMMUNICATION NETWORKS COEXISTING IN SHARED SPECTRUM BANDS .....</b>	<b>622</b>
<i>Andrea Munari ; Nina Grosheva ; Ljiljana Simic ; Petri Mähönen</i>	
<b>ON THE PERFORMANCE AND FAIRNESS OF LTE-U AND WIFI NETWORKS SHARING MULTIPLE UNLICENSED CHANNELS .....</b>	<b>629</b>
<i>Haonan Hu ; Yuan Gao ; Jiliang Zhang ; Xiaoli Chu ; Jie Zhang</i>	
<b>POWER ALLOCATION AND INITIAL ACCESS USING PSO FOR UPLINK NOMA MMWAVE COMMUNICATIONS .....</b>	<b>635</b>
<i>Victoria Dala Pegorara Souto ; Richard Demo Souza ; Bartolomeu F. Uchôa-Filho</i>	
<b>SERVICE ASSURANCE IN 5G NETWORKS: A STUDY OF JOINT MONITORING AND ANALYTICS.....</b>	<b>641</b>
<i>Min Xie ; Qiong Zhang ; Andres J. Gonzalez ; Pål Grønsund ; Paparao Palacharla ; Tadashi Ikeuchi</i>	
<b>DEEP LEARNING BASED COUPLE-LIKE COOPERATIVE COMPUTING METHOD FOR IOT-BASED INTELLIGENT SURVEILLANCE SYSTEMS .....</b>	<b>648</b>
<i>Yu Zhao ; Quan Chen ; Wengang Cao ; Wei Jiang ; Guan Gui</i>	
<b>RESOURCE ALLOCATION IN MOVING SMALL CELL NETWORK USING DEEP LEARNING BASED INTERFERENCE DETERMINATION.....</b>	<b>652</b>
<i>Saniya Zafar ; Sobia Jangsher ; Moayad Aloqaily ; Ouns Bouachir ; Jalel Ben Othman</i>	

<b>ROBUST NEIGHBOR DISCOVERY THROUGH SIDELINK DEMODULATION REFERENCE SIGNAL FOR LTE PROSE NETWORK .....</b>	<b>658</b>
<i>Leïla Nasraoui ; Salama Ikki</i>	
<b>EVALUATING DASH PLAYER QOE WITH MPTCP IN PRESENCE OF A SHARED BOTTLENECK LINK .....</b>	<b>663</b>
<i>Sunit Kumar Nandi ; Pranav Kumar Singh ; Sukumar Nandi</i>	
<b>PRECODING OPTIMIZATION FOR NOMA UAV WITH CELLULAR CONNECTIONS .....</b>	<b>669</b>
<i>Xiaowei Pang ; Nan Zhao ; Weile Zhang ; Yunfei Chen ; Jie Tang ; Zhiguo Ding ; Fumiyuki Adachi</i>	
<b>THREE-DIMENSIONAL WIDEBAND GEOMETRY-BASED STOCHASTIC MODELS FOR MIMO VEHICLE-TO-VEHICLE CHANNELS .....</b>	<b>675</b>
<i>Hao Jiang ; Jie Zhou ; Guan Gui ; Hikmet Sari</i>	
<b>RATE ANALYSIS OF CELL-FREE MASSIVE MIMO WITH ONE-BIT ADCS AND DACS .....</b>	<b>680</b>
<i>Yao Zhang ; Haotong Cao ; Meng Zhou ; Xu Qiao ; Longxiang Yang</i>	
<b>WEIGHTED SUM-RATE MAXIMIZATION IN NOMA COGNITIVE RELAY NETWORK UNDER CSI UNCERTAINTIES .....</b>	<b>686</b>
<i>Shaik Zakir Hussain ; P. Ubaidulla</i>	
<b>A MOBILITY-AWARE PROACTIVE CACHING STRATEGY IN HETEROGENEOUS ULTRA-DENSE NETWORKS .....</b>	<b>692</b>
<i>Ning Gao ; Xiaodong Xu ; Yanzhao Hou ; Lei Gao</i>	
<b>SECRECY THROUGHPUT OPTIMIZATION IN THE BUFFER-AIDED MIMO FULL-DUPLEX RELAYING SYSTEM .....</b>	<b>699</b>
<i>Yue Zhao ; Huifang Chen ; Lei Xie ; Kuang Wang</i>	
<b>USER-CENTRIC ONLINE LEARNING OF POWER ALLOCATION IN H-CRAN .....</b>	<b>705</b>
<i>Meruyert Makhanbet ; Tiejun Lv</i>	
<b>RANGE/DOPPLER SIDELobe SUPPRESSION IN MOVING TARGET DETECTION BASED ON TIME-FREQUENCY BINOMIAL DESIGN .....</b>	<b>711</b>
<i>Jiahuan Wang ; Pingzhi Fan ; Yang Yang ; Yong Liang Guan</i>	
<b>TEMPORAL INTERFERENCE CORRELATION AND JOINT COVERAGE IN FINITE CELLULAR NETWORK WITH NON-UNIFORM PPP .....</b>	<b>716</b>
<i>Liyun Yang ; Hongtao Zhang</i>	
<b>AN ANALYSIS TOWARDS SYNERGETIC TEST OF WI-FI SIGNAL FOR INDOOR LOCALIZATION .....</b>	<b>722</b>
<i>Mu Zhou ; Xiaolong Geng ; Qiaolin Pu ; Xiaoge Huang ; Yanmeng Wang</i>	
<b>HYBRID SUPER-NYQUIST CAP MODULATION BASED VLC WITH LOW BANDWIDTH POLYMER LEDS .....</b>	<b>728</b>
<i>Paul Anthony Haigh ; Petr Chvojka ; Alessandro Minotto ; Andrew Burton ; Petri Murto ; Ergang Wang ; Zabih Ghassemlooy ; Stanislav Zvanovec ; Franco Cacialli ; Izzat Darwazeh</i>	
<b>FDD MULTIUSER MASSIVE MIMO SYSTEMS WITH ADAPTIVE CHANNEL COVARIANCE FEEDBACK .....</b>	<b>734</b>
<i>Samer Bazzi ; Wen Xu Huawei</i>	
<b>ANALYSIS OF LINK LOSS IN WIRELESS MESH NETWORKS BASED ON FIELD TRIALS IN DISASTER COMMUNICATION SCENARIOS .....</b>	<b>740</b>
<i>Rasmus Liborius Bruun ; Troels Bundgaard Sørensen</i>	
<b>A GAME THEORETIC APPROACH FOR POWER ALLOCATION IN FULL DUPLEX WIRELESS NETWORKS .....</b>	<b>746</b>
<i>Hassan Fawaz ; Kinda Khawam ; Samer Lahoud ; Melhem El Helou</i>	
<b>QOE-BASED VIDEO ORCHESTRATION FOR 4G NETWORKS .....</b>	<b>753</b>
<i>Marcos Carvalho ; Vinicius F. Silva ; Erik De Britto E Silva ; Daniel F. Macedo ; Henrique C. C. De Resende ; Johann M. Marquez-Barja ; Cristiano B. Both ; Augusto Zanella Bardini ; Juliano Wickboldt</i>	
<b>LEARNING TO DECODE POLAR CODES WITH QUANTIZED LLRS PASSING .....</b>	<b>759</b>
<i>Jian Gao ; Jincheng Dai ; Kai Niu</i>	
<b>USER CONNECTIVITY MAXIMIZATION FOR D2D AND CELLULAR HYBRID NETWORKS WITH NON-ORTHOGONAL MULTIPLE ACCESS .....</b>	<b>765</b>
<i>Daosen Zhai ; Yutong Wang ; Ruonan Zhang ; Zhenfeng Zhang ; Dawei Wang</i>	
<b>ITERATIVE TRANSMITTER BEAMFORMING OF DISTRIBUTED RELAY NETWORKS IN COGNITIVE RADIO NETWORKS .....</b>	<b>771</b>
<i>Jingxiao Ma ; Wei Liu ; Lei Zhang</i>	
<b>SECRECYPERFORMANCE OF UNTRUSTWORTHY AF RELAY NETWORKS USING COOPERATIVE JAMMING AND SWIPT .....</b>	<b>777</b>
<i>E. N. Egashira ; E. E. Benitez Olivo ; D. P. Moya Osorio ; H. Alves</i>	



<b>TRANSMIT LASER SELECTION FOR UNDERWATER VISIBLE LIGHT COMMUNICATION SYSTEMS</b> .....	783
<i>Mohammed Elamassie ; Mohamed Al-Nahhal ; Refik Caglar Kizilirmak ; Murat Uysal</i>	
<b>ANALYSIS AND PERFORMANCE OF BEAM MANAGEMENT IN 5G NETWORKS</b> .....	789
<i>Ugur Baran Elmali ; Ahmad Awada ; Umur Karabulut ; Ingo Viering</i>	
<b>ON THE THEORETICAL LIMITS OF BEAM STEERING IN MMWAVE MASSIVE MIMO CHANNELS</b> .....	796
<i>Mohamed Shehata ; Matthieu Crussière ; Maryline H�elard</i>	
<b>OPERATING ITS-G5 DSRC OVER UNLICENSED BANDS: A CITY-SCALE PERFORMANCE EVALUATION</b> .....	802
<i>Ioannis Mavromatis ; Andrea Tassi ; Robert J. Piechocki</i>	
<b>SYSTEM MODEL FOR AVERAGE DOWNLINK SINR IN 5G MULTI-BEAM NETWORKS</b> .....	809
<i>Amaanat Ali ; Umur Karabulut ; Ahmad Awada ; Ingo Viering ; Olav Tirkkonen ; Andre Noll Barreto ; Gerhard P. Fettweis</i>	
<b>A MEAN-FIELD FRAMEWORK FOR ENERGY-EFFICIENT POWER CONTROL IN MASSIVE IOT ENVIRONMENTS</b> .....	815
<i>Sami Nadif ; Essaid Sabir ; Abdelkrim Haqiq</i>	
<b>PATTERN RECONFIGURABLE ANTENNAS FOR PASSIVE MOTION DETECTION: WIFI TEST-BED AND FIRST STUDIES</b> .....	821
<i>Stefano Savazzi ; Vittorio Rampa ; Sanaz Kianoush ; Daniele Piazza</i>	
<b>TRANSMIT ANTENNA SELECTION IN WIRELESS-POWERED COMMUNICATION NETWORKS</b> .....	827
<i>Osamah. S. Badarneh ; Daniel Benevides Da Costa ; Pedro Henrique Juliano Nardelli</i>	
<b>HYBRID CODED CACHING IN CELLULAR NETWORKS WITH D2D-ENABLED MOBILE USERS</b> .....	833
<i>Seyedeh Bahereh Hassanpour ; Ahmad Khonsari ; Seyed Pooya Shariatpanahi ; Aresh Dadlani</i>	
<b>LOCALIZATION BY INVERSION OF THE TAYLOR EXPANSION OF THE RECEIVED POWER</b> .....	839
<i>Wafa Njima ; Michel Terr�e ; Iness Ahriz ; Rafik Zayani ; Ridha Bouallegue</i>	
<b>EVM PREDICTION FOR MASSIVE MIMO</b> .....	845
<i>Wael Boukley Hasan ; Angela Doufexi ; George Oikonomou ; Mark Beach</i>	
<b>ANALYTICAL PERFORMANCE EVALUATION OF THZ WIRELESS FIBER EXTENDERS</b> .....	852
<i>Alexandros-Apostolos A. Boullogeorgos ; Evangelos N. Papatotiriou ; Angeliki Alexiou</i>	
<b>PREDICTING THE MUMBLE OF WIRELESS CHANNEL WITH SEQUENCE-TO-SEQUENCE MODELS</b> .....	858
<i>Yourui Huangfu ; Jian Wang ; Rong Li ; Chen Xu ; Xianbin Wang ; Huazi Zhang ; Jun Wang</i>	
<b>PACKET GENERATION SCHEMES AND NETWORK LATENCY IMPLICATIONS IN SDN-ENABLED 5G C-RANS: QUEUING MODEL BASED ANALYSIS</b> .....	865
<i>Abin Mathew ; Manikantan Srinivasan ; C Siva Ram Murthy</i>	
<b>CIRCULAR SPACE-TIME BLOCK CODE DESIGN FOR ULTRA-RELIABLE INDEX MODULATION SCHEMES</b> .....	872
<i>Zehra Yigit ; Ertugrul Basar ; Ibrahim Altunbas</i>	
<b>RESOURCE SCHEDULING FOR LTE IN UNLICENSED BANDS WITH DELAY PRIORITY</b> .....	878
<i>Xiaoge Huang ; Ke Xu ; Yingying Liu ; Qianbin Chen</i>	
<b>JOINT CACHE AND RADIO RESOURCE MANAGEMENT IN FOG RADIO ACCESS NETWORKS: A HIERARCHICAL TWO-TIMESCALE OPTIMIZATION PERSPECTIVE</b> .....	884
<i>Yaohua Sun ; Mugen Peng</i>	
<b>DISASTER-RESILIENT COMMUNICATION FRAMEWORK FOR HETEROGENEOUS VEHICULAR NETWORKS</b> .....	890
<i>Adsadawut Chanakitkarnchok ; Kiattikun Kawila ; Goshi Sato ; Yasunori Owada ; Kultida Rojviboonchai</i>	
<b>SYSTEM LEVEL INTEGRATION OF IRREGULAR REPETITION SLOTTED ALOHA FOR INDUSTRIAL IOT IN 5G NEW RADIO</b> .....	896
<i>H. Murat G�ursu ; M. �agatay Moroglu ; Mikhail Vilgelm ; Federico Clazzer ; Wolfgang Kellerer</i>	
<b>SYMBOL-LEVEL CONSTELLATION SHAPING FOR CHANNEL-CODED PHYSICAL-LAYER NETWORK CODING</b> .....	903
<i>Daniela Donati ; Enrico Paolini ; Mark F. Flanagan</i>	
<b>A NEW LOOK AT CELL-FREE MASSIVE MIMO: MAKING IT PRACTICAL WITH DYNAMIC COOPERATION</b> .....	909
<i>Emil Bj�ornson ; Luca Sanguinetti</i>	
<b>ENHANCED TOA ESTIMATION THROUGH TAP CANDIDATE EXTRACTION FOR POSITIONING IN MULTIPATH CHANNELS</b> .....	915
<i>Iker Sobron ; Iratxe Landa ; I�naki Eizmendi ; Manuel Velez</i>	

<b>ANGLE-DOMAIN NOMA OVER MULTICELL MASSIVE MIMO SYSTEMS</b> .....	921
<i>Weidong Shao ; Shun Zhang ; Hongyan Li ; Jianpeng Ma</i>	
<b>FASTER-THAN-NYQUIST SIGNALING WITH CONSTRAINTS ON PULSE SHAPES</b> .....	927
<i>Akansh Jain ; Sathwik Chadaga P. ; Nambi Seshadri ; R. David Koilpillai</i>	
<b>PERFORMANCE OF MEDIA-BASED MODULATION IN TWO-WAY FULL-DUPLEX RELAYING NETWORKS</b> .....	933
<i>Yalagala Naresh ; A. Chockalingam</i>	
<b>ERROR PROBABILITY ANALYSIS OF NON-ORTHOGONAL MULTIPLE ACCESS FOR RELAYING NETWORKS WITH RESIDUAL HARDWARE IMPAIRMENTS</b> .....	939
<i>Lina Mohjazi ; Lina Bariah ; Sami Muhaidat ; Paschalis C. Sofotasios ; Oluwakayode Onireti ; Muhammad Ali Imran</i>	
<b>ENABLING MASSIVE REAL-TIME APPLICATIONS IN IEEE 802.11BE NETWORKS</b> .....	945
<i>Evgeny Avdotin ; Dmitry Bankov ; Evgeny Khorov ; Andrey Lyakhov</i>	
<b>INR WALLS: PERFORMANCE LIMITS IN RFI DETECTION</b> .....	951
<i>Tilahun M. Getu ; Wessam Ajib ; René Landry</i>	
<b>CODED LORA PERFORMANCE IN WIRELESS CHANNELS</b> .....	957
<i>Giuseppe Baruffa ; Luca Rugini ; Vanni Mecarelli ; Lorenzo Germani ; Fabrizio Frescura</i>	
<b>AN AUCTION-BASED MECHANISM FOR TASK OFFLOADING IN FOG NETWORKS</b> .....	963
<i>Yijun Zu ; Fei Shen ; Feng Yan ; Yang Yang ; Yueyue Zhang ; Zhiyong Bu ; Lianfeng Shen</i>	
<b>PERFORMANCE ANALYSIS OF RELAY BASED MOLECULAR COMMUNICATION WITH DEPLETED MOLECULE SHIFT KEYING</b> .....	969
<i>Jiaying Wang ; Mugen Peng ; Yaqiong Liu</i>	
<b>TWO-BEAM MULTIPLEXING WITH INTER-SUBARRAY CODING FOR ARBITRARY DIRECTIONS BASED ON INTERLEAVED SUBARRAY ARCHITECTURES</b> .....	975
<i>Junwei Zhang ; Wei Liu ; Chao Gu ; Steven Shichang Gao ; Qi Luo</i>	
<b>MINIMAL DISCREPANCY PLACEMENT OF SNIFFERS AND CALIBRATORS FOR WIRELESS INDOOR LOCALIZATION</b> .....	980
<i>Lu Yu ; Yiu-Wing Leung ; Xiaowen Chu ; Joseph K. Y. Ng</i>	
<b>JOINT COMPUTATION OFFLOADING AND SERVICE CACHING FOR MEC IN MULTI-ACCESS NETWORKS</b> .....	987
<i>Jiawei Li ; Heli Zhang ; Hong Ji ; Xi Li</i>	
<b>JOINT ROUTING AND RESOURCE ALLOCATION FOR SOFTWARE DEFINED MOBILE NETWORKS</b> .....	993
<i>Berna Özbek ; Yigitcan Aydogmus ; Aydin Ulas ; Burak Görkemli</i>	
<b>HANDOVER DELAY MITIGATION FOR KOREAN RADIO-BASED TRAIN CONTROL SYSTEM</b> .....	999
<i>Sangchul Oh ; Byungsik Yoon ; Woosik Oh ; Dongjoon Kim ; Dongil Sung</i>	
<b>LONG SHORT-TERM MEMORY BASED SPECTRUM SENSING SCHEME FOR COGNITIVE RADIO</b> .....	1005
<i>Nikhil Balwani ; Dhaval K. Patel ; Brijesh Soni ; Miguel López-Benítez</i>	
<b>COEXISTENCE ANALYSIS OF LTE EMTC AND 5G NEW RADIO</b> .....	1011
<i>Rapeepat Ratasuk ; Nitin Mangalvedhe ; David Bhatoolaul</i>	
<b>MODELING COEXISTENCE OF UNICAST AND MULTICAST COMMUNICATIONS IN 5G NEW RADIO SYSTEMS</b> .....	1017
<i>Andrey Samuylov ; Vitalii Beschastnyi ; Dmitri Moltchanov ; Darya Ostrikova ; Yuliya Gaidamaka ; Vsevolod Shorgin</i>	
<b>A QUEUEING MODEL-ASSISTED TRAFFIC CONDITIONS ESTIMATION SCHEME FOR SUPPORTING VEHICULAR EDGE COMPUTING</b> .....	1023
<i>Peng Sun ; Noura Aljeri ; Azzedine Boukerche</i>	
<b>A DETECTION AND IDENTIFICATION METHOD BASED ON SIGNAL POWER FOR DIFFERENT TYPES OF ELECTRONIC JAMMING ATTACKS ON GPS SIGNALS</b> .....	1029
<i>Esat Elezi ; Göksel Çankaya ; Ali Boyaci ; Serhan Yarkan</i>	
<b>CHANNEL CORRELATION DIVERSITY IN MU-MIMO SYSTEMS – ANALYSIS AND MEASUREMENTS</b> .....	1034
<i>Harsh Tataria ; Seun Sangodoyin ; Andreas F. Molisch ; Peter J. Smith ; Michail Matthaiou ; Jianzhong Zhang ; Reiner. S. Thomä</i>	
<b>ACCURACY LIMITS OF DISTANCE ESTIMATION IN VISIBLE LIGHT SYSTEMS WITH RGB LEDS</b> .....	1041
<i>Ilker Demirel ; Sinan Gezici</i>	
<b>OUTAGE-OPTIMIZED DEPLOYMENT OF UAVS</b> .....	1047
<i>Maryam Shabanighazikelayeh ; Erdem Koyuncu</i>	

<b>PROTOTYPING OF SINGULAR VALUE RECONSTRUCTION PRECODING FOR RELIABLE NON-ORTHOGONAL IOT SIGNALS .....</b>	<b>1053</b>
<i>Tongyang Xu ; Izzat Darwazeh</i>	
<b>EFFECTS OF IRREGULAR PHOTODIODE CONFIGURATIONS FOR INDOOR MIMO VLC WITH MOBILE USERS.....</b>	<b>1059</b>
<i>Ardimas Andi Purwita ; Anil Yesilkaya ; Iman Tavakkolnia ; Majid Safari ; Harald Haas</i>	
<b>CONFIDENCE LEVEL FOR FINITE BLOCKLENGTH ULTRA RELIABLE COMMUNICATION OVER FADING CHANNELS .....</b>	<b>1066</b>
<i>Alex The Phuong Nguyen ; Raphaël Le Bidan ; Frédéric Guilloud</i>	
<b>POWER EFFICIENT TRAJECTORY OPTIMIZATION FOR THE CELLULAR-CONNECTED AERIAL VEHICLES .....</b>	<b>1072</b>
<i>Behzad Khamidehi ; Elvino S. Sousa</i>	
<b>CELLULAR UAV-TO-UAV COMMUNICATIONS .....</b>	<b>1078</b>
<i>M. Mahdi Azari ; Giovanni Geraci ; Adrian Garcia-Rodriguez ; Sofie Pollin</i>	
<b>DEEP LEARNING-BASED DECISION REGION FOR MIMO DETECTION .....</b>	<b>1085</b>
<i>Termeh Faghani ; Arman Shojaeifard ; Kai-Kit Wong ; A. Hamid Aghvami</i>	
<b>COMPRESSED SPECTRUM SENSING USING SPARSE RECOVERY CONVERGENCE PATTERNS THROUGH MACHINE LEARNING CLASSIFICATION .....</b>	<b>1090</b>
<i>Mahmoud Nazzal ; Orkun Hasekioglu ; Ali Riza Ekti ; Ali Görçin ; Hüseyin Arslan</i>	
<b>BACKHAUL AWARE ANALYSIS OF CACHE-ENABLED HETEROGENEOUS NETWORKS .....</b>	<b>1096</b>
<i>Congshan Fan ; Tiankui Zhang ; Yuanwei Liu ; Zhimin Zeng</i>	
<b>GENERALIZED TIME SLOT INDEX MODULATION FOR LIFI .....</b>	<b>1103</b>
<i>Ardimas Andi Purwita ; Anil Yesilkaya ; Tezcan Cogalan ; Majid Safari ; Harald Haas</i>	
<b>OPPORTUNISTIC SCHEDULING IN NETWORK-CODED COOPERATIVE SYSTEMS.....</b>	<b>1110</b>
<i>Ali Reza Heidarpour ; Masoud Ardakani ; Chintha Tellambura</i>	
<b>FULLY DISTRIBUTED ENERGY-EFFICIENT SYNCHRONIZATION FOR HALF-DUPLEX D2D COMMUNICATIONS .....</b>	<b>1116</b>
<i>Onur Karatalay ; Ioannis Psaromiligkos ; Benoit Champagne ; Benoit Pelletier</i>	
<b>USER CLUSTERING AND SCHEDULING IN UAV SYSTEMS EXPLOITING CHANNEL CORRELATION .....</b>	<b>1123</b>
<i>Zhenqiao Cheng ; Jianyi Yang ; Zaixue Wei ; Hongwen Yang</i>	
<b>ANALYSIS OF DISTRIBUTION TEST-BASED AND FEATURE-BASED APPROACHES TOWARD AUTOMATIC MODULATION CLASSIFICATION.....</b>	<b>1129</b>
<i>Pejman Ghasezadeh ; Subharthi Banerjee ; Michael Hempel ; Moe Alahmad ; Hamid Sharif</i>	
<b>WIRELESS POWERED MACHINE-TYPE COMMUNICATION: ENERGY MINIMIZATION VIA COMPRESSED TRANSMISSION .....</b>	<b>1135</b>
<i>Sheeraz A. Alvi ; Xiangyun Zhou ; Salman Durrani</i>	
<b>ENERGY EFFICIENT TASK OFFLOADING IN NOMA-BASED MOBILE EDGE COMPUTING SYSTEM.....</b>	<b>1142</b>
<i>Meihui Hua ; Hui Tian ; Wanli Ni ; Shaoshuai Fan</i>	
<b>SYNERGETIC NODE OF EDGE COMPUTING AND HYBRID FIBRE-WIRELESS (FIWI) ACCESS NETWORKS FOR IOT .....</b>	<b>1149</b>
<i>Hongxing Li ; Guochu Shou</i>	
<b>OPTIMAL D2D COOPERATIVE CACHING SYSTEM IN SDN BASED WIRELESS NETWORK.....</b>	<b>1155</b>
<i>Qi Li ; Xiaoxiang Wang ; Dongyu Wang</i>	
<b>TIME-VARYING SPECTRAL ENTROPY BASED ANALYSIS OF IMPULSE NOISES.....</b>	<b>1162</b>
<i>Neelima Singh ; Brijesh Lall</i>	
<b>DECISION SET OPTIMIZATION AND ENERGY-EFFICIENT MIMO COMMUNICATIONS.....</b>	<b>1168</b>
<i>Hang Zou ; Chao Zhang ; Samson Lasaulce ; Lucas Saludjian ; Patrick Panciatici</i>	
<b>INDOOR WLAN INTRUSION DETECTION USING INTRA-CLASS TRANSFER LEARNING WITH LOW EFFORT .....</b>	<b>1175</b>
<i>Mu Zhou ; Yaoping Li ; Xiaoge Huang ; Qiaolin Pu ; Hui Yuan</i>	
<b>MULTI-CONNECTIVITY MANAGEMENT FOR 5G V2X COMMUNICATION.....</b>	<b>1181</b>
<i>Apostolos Kousaridas ; Chan Zhou ; David Martín-Sacristán ; David Garcia-Roger ; Jose F. Monserrat ; Sandra Roger</i>	
<b>CONTROL LOOP AWARE LTE-V2X SEMI-PERSISTENT SCHEDULING FOR STRING STABLE CACC.....</b>	<b>1188</b>
<i>Arturo González ; Norman Franchi ; Gerhard Fettweis</i>	
<b>SECURE TRANSMISSION IN UNICAST WIRETAP NETWORKS OF TYPE II .....</b>	<b>1195</b>
<i>Keke Hu ; Zhongfang Wang ; Feiwen Li ; Yongming Wang</i>	

<b>LOW-LATENCY EXCHANGE OF COMMON RANDOMNESS FOR GROUP-KEY GENERATION</b> .....	1200
<i>Manish Rao ; J. Harshan</i>	
<b>PHYSICAL LAYER ABSTRACTION MODEL WITH IMPERFECT CHANNEL STATE INFORMATION</b> .....	1206
<i>Viet-Hoa Nguyen ; Qianrui Li ; Nicolas Gresset</i>	
<b>SPECTRUM SENSING IN THE EXTREMELY LOW SNR REGIME BY EXPLOITING DICTIONARY LEARNING</b> .....	1213
<i>Yulong Gao ; Yanping Chen ; Xiaokang Zhou ; Shaochuan Wu</i>	
<b>USER THROUGHPUT ENHANCEMENT WITH DYNAMIC FULL-DUPLEX CELLULAR SYSTEM IN DENSE URBAN MULTI-CELL ENVIRONMENT</b> .....	1218
<i>Kazuki Nishikori ; Kyoya Teramae ; Keiichi Mizutani ; Takeshi Matsumura ; Hiroshi Harada</i>	
<b>DOA TRACKING ALGORITHM FOR THE TIME-VARYING NUMBER OF SIGNAL SOURCES</b> .....	1224
<i>Yulong Gao ; Yanping Chen ; Huang Wang ; Shaochuan Wu</i>	
<b>FASTER-THAN-NYQUIST SIGNALING BASED ON FILTER BANK MULTICARRIER MODULATION</b> .....	1229
<i>Hui Che</i>	
<b>DUAL COMMUNICATIONS IN MIMO SCMA-BASED SECURE HETNETS</b> .....	1235
<i>Mohammad R. Abedi ; Mohammad R. Javan ; Nader Mokari ; H. Yanikomeroglu</i>	
<b>LIGHTWEIGHT MULTI-PARAMETER FUSION LINK QUALITY ESTIMATION BASED ON WEIGHTED EUCLIDEAN DISTANCE</b> .....	1241
<i>Wei Liu ; Yu Xia ; Shunren Hu ; Rong Luo</i>	
<b>MOBILITY-OPTIMIZED DYNAMIC CONTENT PLACEMENT FOR FAST VEHICLES IN 5G NETWORKS</b> .....	1247
<i>Rui Silva ; David Santos ; Daniel Corujo ; Rui L. Aguiar ; Sérgio Figueiredo ; Bruno Parreira</i>	
<b>SIDELobe REDUCTION BY SUBARRAY STACKING FOR UNIFORMLY EXCITED MMW PHASED ARRAYS</b> .....	1254
<i>Muhammad Yasir Javed ; Nuutti Tervo ; Marko E. Leinonen ; Aarno Pärssinen</i>	
<b>LOCATION-AWARE SLEEP STRATEGY FOR ENERGY-DELAY TRADEOFFS IN 5G WITH REINFORCEMENT LEARNING</b> .....	1259
<i>Ali El-Amine ; Hussein Al Haj Hassan ; Mauricio Iturralde ; Loufi Nuaymi</i>	
<b>SIMULTANEOUS LIGHTWAVE INFORMATION AND POWER TRANSFER IN UNDERWATER VISIBLE LIGHT COMMUNICATIONS</b> .....	1265
<i>Sara Ghasvarianjahromi ; Mehdi Karbalayghareh ; Panagiotis D. Diamantoulakis ; George K. Karagiannidis ; Murat Uysal</i>	
<b>UNSUPERVISED-LEARNING POWER CONTROL FOR CELL-FREE WIRELESS SYSTEMS</b> .....	1271
<i>Rasoul Nikbakht ; Anders Jonsson ; Angel Lozano</i>	
<b>MONO-STATIC AUTOMOTIVE JOINT RADAR-COMMUNICATIONS SYSTEM</b> .....	1276
<i>Sayed Hossein Dokhanchi ; Mohammad Alae-Kerahroodi ; Bhavani Shankar Mysore R. ; Björn Ottersten</i>	
<b>PACKET SCHEDULING ALGORITHMS TO MINIMIZE THE AGE OF INFORMATION IN ENERGY HARVESTING NETWORKS</b> .....	1282
<i>Zoubeir Mlika ; Elmahdi Driouch ; Wessam Ajib</i>	
<b>IDFT-VFDM FOR LTE FDD-NR SUL CO-EXISTENCE</b> .....	1288
<i>Qi Feng ; Jiyong Pang ; Yinghui He ; Qiyu Hu ; Guangyao Ding ; Rui Yin ; Guanding Yu</i>	
<b>OPTIMAL CHANNEL RESERVATION FOR PRIMARY USERS IN SPECTRUM SHARING</b> .....	1294
<i>Aaqib Patel ; Mohammed Zafar Ali Khan</i>	
<b>A FRAMEWORK FOR LOAD BALANCED UE ASSOCIATION IN DENSE LTE NETWORKS</b> .....	1300
<i>Soumadip Biswas ; Arobinda Gupta ; Sandip Chakraborty</i>	
<b>ENHANCED LOCALIZATION SYSTEMS WITH MULTIPATH FINGERPRINTS AND MACHINE LEARNING</b> .....	1306
<i>Marcelo N De Sousa ; Reiner S. Thomä Electronic</i>	
<b>OPTIMIZATION OF COMPUTATION RESOURCE FOR CONTAINER-BASED MULTI-MEC COLLABORATION SYSTEM</b> .....	1312
<i>Tao Jin ; Wei Zheng ; Xiangming Wen ; Xin Chen ; Luhan Wang</i>	
<b>LEARNING TO FLIP SUCCESSIVE CANCELLATION DECODING OF POLAR CODES WITH LSTM NETWORKS</b> .....	1319
<i>Xianbin Wang ; Huazi Zhang ; Rong Li ; Lingchen Huang ; Shengchen Dai ; Yourui Huangfu ; Jun Wang</i>	
<b>LIST SELECTION AND DECISION FUSION SCHEME FOR BELIEF PROPAGATION LIST DECODING OF POLAR CODES</b> .....	1324
<i>Zi Qi Chen ; Li Li ; Zheng Ma ; Ping Zhi Fan</i>	

<b>NOVEL EXTENDED CIRCULAR COLOR SHIFT KEYING CONSTELLATION IN VLC SYSTEMS WITH CAMERA-BASED RECEIVERS .....</b>	<b>1331</b>
<i>Saadallah Kassir ; Safa Halawi ; Elias Yaacoub ; Zaher Dawy ; Amine Bermak</i>	
<b>UPLINK POWER CONTROL MODELING FOR DENSE OFDMA-BASED HETEROGENEOUS NETWORKS.....</b>	<b>1337</b>
<i>Luis Diez ; Ramón Agüero</i>	
<b>ENERGY SAVINGS BY TASK OFFLOADING TO A FOG CONSIDERING RADIO FRONT-END CHARACTERISTICS .....</b>	<b>1343</b>
<i>Pawel Kryszkiewicz ; Filip Idzikowski ; Bartosz Bossy ; Bartosz Kopras ; Hanna Bogucka</i>	
<b>SELECTION OF WAVEFORM PARAMETERS USING MACHINE LEARNING FOR 5G AND BEYOND.....</b>	<b>1349</b>
<i>Ahmet Yazar ; Hüseyin Arslan</i>	
<b>A MULTI-TIER COMMUNICATION SCHEME FOR DRONE-ASSISTED DISASTER RECOVERY SCENARIOS .....</b>	<b>1355</b>
<i>Farouk Mezghani ; Pranvera Kortoçi ; Nathalie Mitton ; Mario Di Francesco</i>	
<b>AN IOT BLOCKCHAIN ARCHITECTURE USING ORACLES AND SMART CONTRACTS: THE USE-CASE OF A FOOD SUPPLY CHAIN .....</b>	<b>1362</b>
<i>Hajar Moudoud ; Soumaya Cherkaoui ; Lyes Khoukhi</i>	
<b>DIGITAL SELF-INTERFERENCE CANCELLATION IN THE PRESENCE OF PHASE NOISE FOR FULL-DUPLEX COMMUNICATIONS.....</b>	<b>1368</b>
<i>Qiang Xu ; Chenxing Li ; Ying Liu ; Xin Quan ; Youxi Tang</i>	
<b>MILLIMETER WAVE LOS/NLOS IDENTIFICATION AND LOCALIZATION VIA MEAN-SHIFT CLUSTERING.....</b>	<b>1374</b>
<i>Boyang Hu ; Hui Tian ; Shaoshuai Fan</i>	
<b>ON THE SECRECY PERFORMANCE OF THE K-USER COGNITIVE RADIO NETWORK WITH ITERATIVE INTERFERENCE ALIGNMENT.....</b>	<b>1381</b>
<i>Eylem Erdogan ; Mustafa Namdar ; Arif Basgumus ; Sultan Aldirmaz Colak ; Seda Ustunbas ; Hakan Alakoca ; Lutfiye Durak-Ata</i>	
<b>A SCALABLE AND FAST MODEL FOR PERFORMANCE ANALYSIS OF IEEE 802.15.4 TSCH NETWORKS.....</b>	<b>1387</b>
<i>Hamideh Hajizadeh ; Majid Nabi ; Rasool Tavakoli ; Kees Goossens</i>	
<b>ON FAIRNESS OPTIMIZATION FOR NOMA-ENABLED MULTI-BEAM SATELLITE SYSTEMS .....</b>	<b>1394</b>
<i>Anyue Wang ; Lei Lei ; Eva Lagunas ; Ana I. Pérez Neira ; Symeon Chatzinotas ; Björn Ottersten</i>	
<b>SECURE COOPERATIVE TRANSMISSION IN COGNITIVE AF RELAY SYSTEMS WITH DESTINATION-AIDED JAMMING AND ENERGY HARVESTING .....</b>	<b>1400</b>
<i>Runcong Su ; Ying Wang ; Ruijin Sun</i>	
<b>EVALUATION OF THE MUTUAL INFORMATION OF MIMO CHANNEL WITH FINITE-ALPHABET INPUTS.....</b>	<b>1405</b>
<i>Pei Yang ; Jianming Cheng ; Hongwen Yang</i>	
<b>TIME PRECODING ENABLED NON-ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING .....</b>	<b>1411</b>
<i>Waseem Ozan ; Paul Anthony Haigh ; Bo Tan ; Izzat Darwazeh</i>	
<b>ENERGY EFFICIENCY MAXIMIZATION IN MASSIVE MIMO-AIDED, FRONTHAUL-CONSTRAINED C-RAN.....</b>	<b>1417</b>
<i>Jobin Francis ; Gerhard Fettweis</i>	
<b>THE EVALUATION OF FFR FOR INTERFERENCE MANAGEMENT IN COORDINATED HYBRID TERRESTRIAL-AERIAL NETWORK .....</b>	<b>1423</b>
<i>Ahmet Enes Duranay ; Hüseyin Arslan</i>	
<b>ERROR REFINEMENT BASED ITERATIVE LINE SEARCH FOR SYMBOL DETECTION IN UPLINK MASSIVE MIMO .....</b>	<b>1429</b>
<i>Arijit Datta ; Manish Mandloi ; Vimal Bhatia</i>	
<b>ON THE RELIABILITY OF NR-V2X AND IEEE 802.11BD.....</b>	<b>1435</b>
<i>Waqar Anwar ; Andreas Traßl ; Norman Franchi ; Gerhard Fettweis</i>	
<b>HYBRID TERRESTRIAL-AERIAL NETWORK FOR ULTRA-RELIABLE LOW-LATENCY COMMUNICATION .....</b>	<b>1442</b>
<i>Muhammad Sohaib J. Solaïja ; Seda Dogan ; Saliha Büyükcörok ; Hüseyin Arslan</i>	
<b>NONLINEAR RECEIVER FOR DIFFUSION-BASED MOLECULAR COMMUNICATIONS.....</b>	<b>1448</b>
<i>Mahendra S. Thakur ; Sandesh Jain ; Sanjeev Sharma ; Vimal Bhatia</i>	
<b>REDUCING COMPUTATIONAL COMPLEXITY OF FACTOR GRAPH-BASED BELIEF PROPAGATION ALGORITHM FOR DETECTION IN LARGE-SCALE MIMO SYSTEMS .....</b>	<b>1454</b>
<i>Iman Abbaszadeh ; Mostafa Darabi ; Mehrdad Ardebilipour ; Behrouz Maham</i>	

<b>MULTIVARIATE-KLMS BASED POST-DISTORTER FOR NONLINEAR RGB-LEDS FOR COLOR-SHIFT KEYING VLC</b> .....	1460
<i>Sandesh Jain ; Rangeet Mitra ; Vimal Bhatia</i>	
<b>ANOMALY-BASED DDOS ATTACK DETECTION BY USING SPARSE CODING AND FREQUENCY DOMAIN</b> .....	1466
<i>Ramin Fadaei Fouladi ; Orhan Ermis ; Emin Anarim</i>	
<b>STATISTICAL CHANNEL MODELING FOR SHORT RANGE LINE-OF-SIGHT TERAHERTZ COMMUNICATION</b> .....	1472
<i>Kürsat Tekbiyik ; Emre Ulusoy ; Ali Rıza Ekti ; Serhan Yarkan ; Tunçer Baykas ; Ali Görçin ; Günes Karabulut Kurt</i>	
<b>ADAPTIVE SAMPLING TECHNIQUES FOR AUTONOMOUS AGENTS IN WIRELESS SENSOR NETWORKS</b> .....	1477
<i>Mehmet Basaran ; Stephan Schlupkothen ; Gerd Ascheid</i>	
<b>PACKET LOSS IN LATENCY-CONSTRAINED ETHERNET-BASED PACKETIZED C-RAN FRONTHAUL</b> .....	1483
<i>Jay Kant Chaudhary ; Jobin Francis ; André Noll Barreto ; Gerhard Fettweis</i>	
<b>HETEROGENEOUS NETWORKS' RATE MAXIMIZATION: DISTRIBUTED OR CENTRALIZED PROCESSING?</b> .....	1489
<i>Betty Nagy ; Maha Elsabrouty ; Salwa Elramly</i>	
<b>ON THE PERFORMANCE OF TACTICAL COMMUNICATION INTERCEPTION USING MILITARY FULL DUPLEX RADIOS</b> .....	1495
<i>Lutfi Samara ; Ala Gouïsssem ; Alaa Awad Abdellatif ; Ridha Hamila ; Mazen O. Hasna</i>	
<b>INTERCEPT PROBABILITY OF UNDERLAY UPLINK CRNS WITH MULTI-EAVESDROPPERS</b> .....	1501
<i>Moumia Bouabdellah ; Faïssal El Bouanani ; Paschalis C. Sofotasios ; Daniel Benevides Da Costa ; Hussain Ben-Azza ; Kahtan Mezher ; Sami Muhaidat</i>	
<b>ECONOMIC TRADE-OFF OF SMALL CELL NETWORKS: COMPARISON BETWEEN THE MILLIMETRE WAVEBANDS AND UHF/SHF BANDS</b> .....	1507
<i>Emanuel Teixeira ; Fernando J. Velez ; Jon M. Peha</i>	
<b>ROBUSTNESS OF IOT GATEWAY DEPLOYMENT IN SMART HOSPITALS</b> .....	1512
<i>Pei-Zhong Luo ; Hsi-Lu Chao ; Sau-Hsuan Wu</i>	
<b>MOBILE SERVICE CONTINUITY FOR EDGE TRAIN NETWORKS</b> .....	1518
<i>Osamah Ibrahim Abdullaziz ; Samer T. Talat ; Chen-Hao Chiu ; Li-Chun Wang</i>	
<b>INTERACTIONS BETWEEN TRAIN VELOCITY AND CELLULAR LINK THROUGHPUT - AN EXTENSIVE STUDY</b> .....	1524
<i>Johan Garcia ; Simon Sundberg ; Anna Brunstrom ; Claes Beckman</i>	
<b>A NEW LOOK AT UAV CHANNEL MODELING: A LONG TAIL OF LOS PROBABILITY</b> .....	1531
<i>Zihan Meng ; Youjia Chen ; Ming Ding ; David López-Pérez</i>	
<b>RAY TRACING SIMULATIONS IN MILLIMETER-WAVE VEHICULAR COMMUNICATIONS</b> .....	1537
<i>Bruno Colo ; Abdurrahman Fouda ; Ahmed S. Ibrahim</i>	
<b>PARTIAL LATTICE REDUCTION AND SUBSPACE DETECTION OF LARGE-SCALE MIMO SYSTEMS</b> .....	1541
<i>Mohammad Kazem Izadinasab ; Oussama Damen</i>	
<b>SECURING IPV6 WIRELESS NETWORKS AGAINST MALICIOUS ROUTER ADVERTISEMENTS</b> .....	1547
<i>Jefferson Cavalcante ; Alex F R Trajano ; Lucas Leite ; Miguel F. Mariano ; Joaquim Celestino Júnior ; Ahmed Patel ; José Neuman De Souza</i>	
<b>TOWARDS OPTIMAL ENERGY HARVESTING RECEIVER DESIGN IN MIMO SYSTEMS</b> .....	1553
<i>Ali Kariminezhad ; Aydin Sezgin</i>	
<b>PROXIMITY DETECTION BASED ON MOBILE EDGE COMPUTING IN TIME-AWARE ROAD NETWORKS</b> .....	1559
<i>Yaqiong Liu ; Mugen Peng ; Guochu Shou</i>	
<b>LOW COMPLEXITY HYBRID PRECODING FOR MMWAVE MASSIVE MIMO SYSTEMS</b> .....	1566
<i>Yu Huang ; Chen Liu ; Mujun Qian ; Yan Chen</i>	
<b>A STUDY OF SOJOURN TIME FOR INDOOR LIFI CELLULAR NETWORKS</b> .....	1572
<i>Mohammad Dehghani Soltani ; Zhihong Zeng ; Hossein Kazemi ; Cheng Chen ; Harald Haas ; Majid Safari</i>	
<b>SOURCE ROUTING MINIMUM COST FORWARDING PROTOCOL OVER 6TISCH APPLIED TO THE OPENMOTE-B MULTI-HOP PLATFORM</b> .....	1578
<i>Anderson Rocha Ramos ; Fernando J. Velez ; Gordana Gardašević</i>	
<b>UPLINK PERFORMANCE OF NOMA-2000 WITH DYNAMIC USER GROUPING</b> .....	1584
<i>Ersöy Caliskan ; Mutlu Koca ; Guan Gui ; Hikmet Sari</i>	

<b>EVALUATION OF GAME THEORY FOR CENTRALIZED RESOURCE ALLOCATION IN MULTI-CELL NETWORK SLICING</b> .....	1590
<i>Yue Liu ; Xu Yang ; Yeok Cheng Wong ; Yapeng Wang ; Laurie Cuthbert</i>	
<b>HYBRID NONLINEAR MULTIUSER EQUALIZER FOR MMWAVE MASSIVE MIMO CE-OFDM SYSTEMS</b> .....	1596
<i>R. Magueta ; R. Enes ; S. Teodoro ; A. Silva ; D. Castanheira ; R. Dinis ; A. Gameiro</i>	
<b>PERFORMANCE EVALUATION OF LATENCY FOR NB-LTE NETWORKS IN INDUSTRIAL AUTOMATION</b> .....	1602
<i>Kofi Ata Nsiah ; Zubair Amjad ; Axel Sikora ; Benoît Hilt</i>	
<b>A DISTRIBUTED USER-CELL ASSOCIATION FOR SPECTRAL AND ENERGY EFFICIENCY TRADEOFF IN MASSIVE MIMO UDHNS</b> .....	1609
<i>Sinasi Cetinkaya ; Huseyin Arslan</i>	
<b>GENERALIZED SPACE TIME BLOCK CODED SPATIAL MODULATION SYSTEMS</b> .....	1615
<i>Lixia Xiao ; Pei Xiao ; Chao Xu ; Ibrahim A. Hemadeh ; De Mi ; Wanming Hao</i>	
<b>MACHINE LEARNING BASED POPULARITY REGENERATION IN CACHING-ENABLED WIRELESS NETWORKS</b> .....	1621
<i>Jianbin Chuan ; Li Wang ; Ruqiu Ma</i>	
<b>TRADING OFF COMPUTATION WITH TRANSMISSION IN STATUS UPDATE SYSTEMS</b> .....	1627
<i>Peng Zou ; Omur Ozel ; Suresh Subramaniam</i>	
<b>AVERAGE AGE-OF-INFORMATION WITH A BACKUP INFORMATION SOURCE</b> .....	1633
<i>Elvina Gindullina ; Leonardo Badia ; Deniz Gündüz</i>	
<b>LEARNING TO OPTIMIZE WITH UNSUPERVISED LEARNING: TRAINING DEEP NEURAL NETWORKS FOR URLLC</b> .....	1639
<i>Chengjian Sun ; Chenyang Yang</i>	
<b>JOINT USER SELECTION AND PRECODING IN MULTIUSER MIMO SYSTEMS VIA GROUP LASSO</b> .....	1646
<i>Saba Asaad ; Ali Bereyhi ; Ralf R. Müller ; Rafael F. Schaefer</i>	
<b>WIRELESS FEDERATED DISTILLATION FOR DISTRIBUTED EDGE LEARNING WITH HETEROGENEOUS DATA</b> .....	1652
<i>Jin-Hyun Ahn ; Osvaldo Simeone ; Joonhyuk Kang</i>	
<b>LEARNING-BASED PHYSICAL LAYER COMMUNICATIONS FOR MULTIAGENT COLLABORATION</b> .....	1658
<i>Arsham Mostaani ; Osvaldo Simeone ; Symeon Chatzinotas ; Bjorn Ottersten</i>	
<b>DECISION FUSION RULES IN AMBIENT BACKSCATTER WIRELESS SENSOR NETWORKS</b> .....	1664
<i>Domenico Ciuonzo ; Giacinto Gelli ; Antonio Pescapé ; Francesco Verde</i>	
<b>PERFORMANCE ANALYSIS OF FREQUENCY DOMAIN IM SCHEMES UNDER CFO AND IQ IMBALANCE</b> .....	1670
<i>Armed Tusha ; Seda Dogan ; Hüseyin Arslan</i>	
<b>TIMELY SCHEDULING OF URLLC PACKETS USING PRECODER COMPATIBILITY ESTIMATES</b> .....	1675
<i>Nassar Ksairi ; Marios Kountouris</i>	
<b>TRANSMIT-RECEIVE GENERALIZED SPATIAL MODULATION BASED ON DUAL-LAYERED MIMO TRANSMISSION</b> .....	1681
<i>Nemanja Stefan Perovic ; Marco Di Renzo ; Mark F. Flanagan</i>	
<b>SWIPT-BASED MOBILE EDGE COMPUTING SYSTEMS: A STOCHASTIC GEOMETRY PERSPECTIVE</b> .....	1688
<i>Ayşe Ipek Akin ; Hamed Mirghasemi ; Luc Vandendorpe</i>	
<b>LOCATION VERIFICATION SYSTEM FOR PILOT SPOOFING ATTACK DETECTION</b> .....	1695
<i>Ruolan Zhu ; Na Li ; Xiaofeng Tao ; Lei Gao</i>	
<b>SET PARTITION MODULATION</b> .....	1700
<i>Ferhat Yarkin ; Justin P. Coon</i>	
<b>ON THE PERFORMANCE OF PHYSICALLY CONSTRAINED MULTI-PAIR TWO-WAY MASSIVE MIMO RELAYING WITH ZERO FORCING</b> .....	1707
<i>Jun Qian ; Christos Masouros</i>	
<b>ON ESTIMATING MAXIMUM SUM RATE OF MIMO SYSTEMS WITH SUCCESSIVE ZERO-FORCING DIRTY PAPER CODING AND PER-ANTENNA POWER CONSTRAINT</b> .....	1713
<i>Thuy M. Pham ; Ronan Farrell ; Le-Nam Tran</i>	
<b>DEEP CONVOLUTIONAL LEARNING-AIDED DETECTOR FOR GENERALIZED FREQUENCY DIVISION MULTIPLEXING WITH INDEX MODULATION</b> .....	1719
<i>Merve Turhan ; Ersin Öztürk ; Hakan Ali Çirpan</i>	
<b>WHAT IS THE BENEFIT OF CODE-DOMAIN NOMA IN MASSIVE MIMO?</b> .....	1725
<i>Mai T. P. Le ; Luca Sanguinetti ; Emil Björnson ; Maria-Gabriella Di Benedetto</i>	

<b>PERFORMANCE OF A NOVEL MAXIMUM-RATIO PRECODER IN MASSIVE MIMO WITH MULTIPLE-ANTENNA USERS .....</b>	<b>1730</b>
<i>James A. C. Sutton ; Hien Quoc Ngo ; Michail Matthaiou</i>	
<b>WEIGHTED TRADEOFF BETWEEN SPECTRAL EFFICIENCY AND ENERGY EFFICIENCY IN ENERGY HARVESTING SYSTEMS.....</b>	<b>1736</b>
<i>Arooj Mubashara Siddiqui ; Leila Musavian ; Sonia Aissa ; Qiang Ni</i>	
<b>Author Index</b>	