The 5G air interface is targeted to have higher transmission rates, faster access, support of larger user density, and better user experience for enhanced mobile broadband (eMBB) services. Meanwhile, it connects to new vertical industries and new devices, creating new application scenarios such as massive machine-type communications (mMTC) and ultra-reliable and low-latency communications (URLLC) services by supporting massive number of devices and enabling mission critical transmissions with ultra-high reliability and ultra-low latency requirement, respectively. In the study towards 5G air interface standardization, non-orthogonal multiple access (NoMA) is one of the most popular topics with 15 different schemes proposed already. Generally, NoMA can efficiently support higher capacity with greater flexibility and robustness, as well as adaptability towards large number of connections. These properties contribute towards a better user experience for variant kinds of services.

This workshop aims to provide a platform for the leading researchers in this area, both from academia and industry, to share their views and the most recent ideas, progress in algorithm and procedure design, as well as prototype implementation in lab or field on NoMA related techniques for 5G radio access networks. The workshop also aims to stimulate enthusiastic discussions among all experts on how the NoMA can best fit in the whole system design and help to meet the diverse requirements of 5G radio networks for eMBB, mMTC, as well as URLLC services.

General Chairs:
Peiying Zhu, Huawei Technologies
Yoshihisa Kishiyama, NTT DoCoMo
Wei Yu, University of Toronto

Executive Committee:
Pingzhi Fan, Southwest Jiaotong University
Zhaoyang Zhang, Zhejiang University
Yan Chen, Huawei Technologies
Muhammad Ali Imran, University of Glasgow

Technical Program Committee:
Yiqun Wu, Huawei Technologies
Chen Qian, Samsung
Gang Wu, UESTC
Jian Zhang, Fujitsu
Jinho Choi, Gwangju Institute of Science and Technology
Linglong Dai, Tsinghua University
Ren Bin, CATT

Program

Sunday, 24 Sept. 2017 9:00-10:30 Toronto II Ballroom

Session 1 Oral Presentations

1 Blind Multiple User Detection for Grant-free MUSA without Reference Signal
Zhifeng Yuan, Chunlin Yan, Yifei Yuan, Weimin Li, ZTE Corporation

2 Low complexity detection algorithm for low PAPR interleaving based NoMA schemes
Chen Qian, Qi Xiong, Bin Yu, Chengjun Sun, Samsung Electronics

3 On the Performance of IDMA-based Non-Orthogonal Multiple Access Schemes
Afshin Haghhighat, Shahrokh Nayeb Nazar, Robert Olesen, InterDigital

4 Two Simplified Multituser Detection Algorithms For Uplink SCMA Systems Via Generalized Approximate Message Passing
Yu Huang, Yunzhou Li, Jing Wang, Tsinghua University

5 A survey of Non-Orthogonal Multiple Access for 5G
Kun Lu, Zhanji Wu, Beijing University of Posts and Telecommunications

6 Ultra-Dense Networks in 5G: Interference Management via NoMA and Treating Interference as Noise
Navid Naderalizadeh, Oner Orhan, Intel Corporation; Hosein Nikopour, Intel Labs; Shilpa Talwar, Intel Corporation

Sunday, 24 Sept. 2017 11:00-12:30 Toronto II Ballroom

Session 2 Keynotes Speeches I

1 NOMA – A Paradigm Shift in Multiple Access for Next Generation Wireless Networks
Zhiguo Ding, Lancaster University

2 Scalable SCMA
Jianglei Ma, Huawei Technologies

3 Non-orthogonal Multiple Access for Internet of Things
Zhaoyang Zhang, Zhejiang University

Sunday, 24 Sept. 2017 14:00-15:00 Toronto II Ballroom

Session 3 Keynotes Speeches II

1 The Myths, Realities and Futures of NOMA: A Historic Perspective on FDMA, TDMA, CDMA, OFDMA, SDMA, IDMA, CCMA and 'all that'...
Lajos Hanzo, University of Southampton
Session 4 Posters

1. A Nonbinary LDPC-Coded SCMA System with Optimized Codebook Design
   Qingli He, B. Bai, Dan Feng, Hengzhou Xu, Min Zhu, Xidian University

2. A Novel Opportunistic NOMA Scheme for 5G Massive MIMO Multicast Communications
   Ke Xiao, Shun Dai, North China University of Technology; Humphrey Rutagemwa, Bo Rong, Communications Research Centre Canada, Gong Liang, Academy of Broadcast Planning; Kadoch Michel, Ecole de technologie superieure

3. A Novel Uplink NOMA Scheme Based on Low Density Superposition Modulation
   Chengxin Jiang, Zhanji Wu, Beijing University of Posts and Telecommunications

4. Bandwidth Minimization under Probabilistic Constraints and Statistical CSI for NOMA
   Krishna Chitti, Fredrik Rusek, Lund University; Tumula V. K. Chaitanya, Huawei Technologies Sweden AB

5. Detection of Carrier-Interferometry Code Based Overloaded Multi-carrier CDMA Signals
   Ming-Shiu Li, Yu T. Su, National Chiao Tung University

6. Hybrid Message Passing based Low Complexity Receiver for SCMA System over Frequency Selective Channels
   Weijie Yuan, Beijing Institute of Technology; Huiming Huang, BSIR; Nan Wu, Beijing Institute of Technology; Lei Zhou, BSIR; Jingming Kuang, Beijing Institute of Technology

7. Investigation of Non-Orthogonal Multiple Access Techniques for Future Cellular Networks
   Ryan Keating, Rapeepat Ratasuk, Nokia Networks; Amitava Ghosh, Nokia

8. Joint Pattern Assignment and Power Allocation in PDMA
   Jie Zeng, Tsinghua University; Bei Liu, Chongqing University of Post and Communications; Xin Su, Tsinghua University

Session 5 Panel

NoMA Enabled 5G New Radio, How Different Will It Be?
Moderator: Yan Chen, Huawei Technologies
Panelists: Yoshihisa Kishiyama, NTT DoCoMo; Jianglei Ma, Huawei Technologies; Zhiguo Ding, Lancaster University; Zhaoyang Zhang, Zhejiang University; Jinho Choi, GIST