Technical Program

Tuesday, May 17

8:30 AM - 12:30 PM

**School of Information Theory with Instructor Syed Ali Jafar, University of California, Irvine**

Interference Alignment : A New Look at Signal Dimensions in Interference Networks
  
  **Room: ART 214**
  
  **Chair: Robert Schober (University of British Columbia, Canada)**

12:30 PM - 2:00 PM

**Lunch Break**

2:00 PM - 6:00 PM

**School of Information Theory with Instructor Mung Chiang, Princeton University**

Optimizing Wireless Network Resource Allocation
  
  **Room: ART 214**
  
  **Chair: Julian Cheng (University of British Columbia, Canada)**

6:30 PM - 9:00 PM

**Welcoming Reception**

  
  **Room: Sun Room, Admin Building**

Wednesday, May 18

8:00 AM - 9:00 AM

**Plenary Speaker: Frank Kschischang, University of Toronto**

Subspace Codes and Network Coding
  
  **Room: ASC 140**
  
  **Chair: Norman C. Beaulieu (University of Alberta, Canada)**

9:00 AM - 10:40 AM

**Coding and Information Theory I**

  
  **Room: ASC 140**
  
  **Chair: Frank R. Kschischang (University of Toronto, Canada)**

- **Information Rates of Cyclostationary Faster-than-Nyquist Signaling**
  
  Yong Jin Daniel Kim (McGill University, Canada); Jan Bajcsy (McGill University, Canada)

- **Design of Multi-Edge-Type LDPC Codes for High-Order Coded Modulation**
  
  Lei Zhang (University of Toronto, Canada); Frank R. Kschischang (University of Toronto, Canada)

- **A New Approach for FEC Decoding Based on the BP Algorithm in LTE and WiMAX Systems**
  
  Ahmed Refaey Hussein (Laval University, Canada); Sebastien Roy (Laval University, Canada); Paul Fortier (Laval University, Canada)
**The Delay Selector Channel: Definition and Capacity Bounds**
Lu Cui (York University, Canada); Andrew Eckford (York University, Canada)

**On the Transmission of a Gaussian Source over an AWGN channel with Correlated Interference**
Morteza Varasteh (Sharif University of Technology, Iran); Hamid Behroozi (Sharif University of Technology, Iran)

10:40 AM - 11:00 AM

**Morning Coffee Break**

Room: ASC 120 Foyer

11:00 AM - 12:20 PM

**Interference and Cognitive Radio**

Room: ASC 140
Chair: Andrew Eckford (York University, Canada)

**Optimum Cognitive Radio Transmission Scheme for Reducing Average Interference Power**
Sang Joon Kim (Samsung, Korea); Saeed S. Ghassemzadeh (AT&T Labs - Research, USA); Robert Miller (AT&T Labs - Research, USA); Vahid Tarokh (Harvard University, USA)

**Interference Alignment and Neutralization in a Cognitive 3-User MAC-Interference Channel: Degrees of Freedom**
Anas Chaaban (Ulm University, Germany); Aydin Sezgin (Ulm University, Germany)

**On the Capacity of the Cognitive Z-Interference Channel**
Mojtaba Vaezi (McGill University, Canada); Mai Vu (McGill University, Canada)

**Capacity Bounds for the Three-User Cognitive Z-Interference Channel**
Mahtab Mirmohseni (Sharif University of Technology, Iran); Bahareh Akbbari (Sharif University of Technology, Iran); Mohammad Reza Aref (Sharif University of Tech., Iran)

12:20 PM - 2:00 PM

**Lunch Break**

2:00 PM - 3:20 PM

**Sequences and Reed-Solomon Codes**

Room: ASC 140
Chair: Vahid Tarokh (Harvard University, USA)

**Peak Power Analysis of MC-CDMA Employing Golay Complementary Sequences**
Lin Dong (Lakehead University, Canada); Nam Yul Yu (Lakehead University, Canada)

**Group Randomness Properties of Pseudo-Noise and Gold Sequences**
Behtash Babadi (Harvard University, USA); Saeed S. Ghassemzadeh (AT&T Labs - Research, USA); Vahid Tarokh (Harvard University, USA)

**Adaptive Single-Trial Error/Erasure Decoding of Reed-Solomon Codes**
Christian Senger (Ulm University, Germany); Vladimir Sidorenko (University of Ulm, Germany); Steffen Schober (Ulm University, Germany); Martin Bossert (University of Ulm, Germany); Victor V. Zyablov (Institute for Information Transmission Problems (IITP) RAS, Russia)
Multivariate Interpolation Decoding of Heterogeneous Interleaved Reed-Solomon Codes
Farnaz Shayegh (Concordia University, Canada); M. Reza Soleymani (Concordia University, Canada)

3:20 PM - 3:40 PM

Afternoon Coffee Break
Room: ASC 120 Foyer

3:40 PM - 5:20 PM

Source Coding
Room: ASC 140
Chair: Jing Wang (Research In Motion Limited, Canada)

**On Optimum Fixed-Rate Causal Scalar Quantization Design for Causal Video Coding**
Lin Zheng (University of Waterloo, Canada); En-hui Yang (University of Waterloo, Canada)

**Hard-decision Quantization with Adaptive Reconstruction Levels for High Efficiency Video Coding**
Jing Wang (Research In Motion Limited, Canada); Xiang Yu (Research In Motion Limited, Canada); Da-ke He (Research In Motion/SlipStream, Canada)

**Exploiting Memory and Soft-Decision Information in Channel Optimized Quantization for Correlated Fading Channels**
Shervin Shahidi (Queen's University, Canada); Fady Alajaji (Queen's University, Canada); Tamas Linder (Queen's University, Canada)

**Hybrid Digital-Analog Source-Channel Coding with One-to-Three Bandwidth Expansion**
Ahmad Abou Saleh (Queen's University, Canada); Fady Alajaji (Queen's University, Canada); Wai-Yip Geoffrey Chan (Queen's University, Canada)

**Credit-Based Variable-to-Variable Length Coding: Key Concepts and Preliminary Redundancy Analysis**
Jin Meng (University of Waterloo, Canada); En-hui Yang (University of Waterloo, Canada)

5:00 PM - 6:30 PM

**Canadian Society of Information Theory Meeting**
Room: UNC 334

Thursday, May 19

8:00 AM - 9:00 AM

**Plenary Speaker: Vahid Tarokh, Harvard University**
Near Theoretical Lower bound Sparse Representation and Compressive Sampling
Room: ASC 140
Chair: Robert Schober (University of British Columbia, Canada)

9:00 AM - 10:40 AM

**Network Coding and Cooperative Diversity**
Room: ASC 140
Chair: Ashish Khisti (University of Toronto, Canada)

**Lattice Network Coding over Finite Rings**  
Chen Feng (University of Toronto, Canada); Danilo Silva (Federal University of Santa Catarina, Brazil); Frank R. Kschischang (University of Toronto, Canada)

**On Noisy Network Coding for a Gaussian Relay Chain Network with Correlated Noises**  
Lei Zhou (University of Toronto, Canada); Wei Yu (University of Toronto, Canada)

**Soliton-like network coding for a single relay**  
Andrew Liau (Queen's University, Canada); Shahram Yousefi (Queen's University, Canada); Il-Min Kim (Queen's University, Canada)

**Optimal Rates for Decode-And-Forward Cooperative Networks with Partial CSI**  
Ehsan Karamad (University of Toronto, Canada); Raviraj Adve (University of Toronto, Canada)

**Average Outage and Non-Outage Duration of Selective Decode-and-Forward Relaying**  
Nikola Zlatanov (University of British Columbia, Canada); Robert Schober (University of British Columbia, Canada); Zoran Hadzi-Velkov (Ss. Cyril and Methodius University, Macedonia); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece)

**10:40 AM - 11:00 AM**

**Morning Coffee Break**

Room: ASC 120 Foyer

**11:00 AM - 12:20 PM**

**Optical Communications**

Room: ASC 140

**The Per-Sample Capacity of Zero-dispersion Optical Fibers**  
Mansoor Isvand Yousefi (University of Toronto, Canada); Frank R. Kschischang (University of Toronto, Canada)

**Spectrally Factorized Optical OFDM**  
Kasra Asadzadeh (McMaster University, Canada); Ahmed A. Farid (McMaster University, Canada); Steve Hranilovic (McMaster University, Canada)

**Multi-Hop Relaying over the Atmospheric Poisson Channel**  
Majid Safari (University of Waterloo, Canada); Mohammad Rad (Université Laval, Canada); Murat Uysal (Ozyegin University, Turkey)

**DMT Analysis of Multi-Hop Coherent FSO Communication over Atmospheric Channels**  
Sahar Molla Aghajanzadeh (University of Waterloo, Canada); Murat Uysal (Ozyegin University, Turkey)

**12:20 PM - 2:00 PM**

**Lunch Break**

**2:00 PM - 3:20 PM**

**Relay-Assisted Communication**

Room: ASC 140
Chair: Chinthu Tellambura (University of Alberta, Canada)

**Joint Typicality Analysis for Half-Duplex Cooperative Communication**
Ahmad Abu Al Haija (McGill University, Canada); Mai Vu (McGill University, Canada)

**Distributed Optimization of the Bhattacharyya Parameter in Wireless Relay Networks**
Josephine Chu (MaxLinear Inc., USA); Andrew Eckford (York University, Canada); Raviraj Adve (University of Toronto, Canada)

**Complexity-Efficient Detection for MIMO Relay Networks**
Shuangshuang Han (University of Alberta, Canada); Chinthu Tellambura (University of Alberta, Canada)

**Packet Level Analysis for AMC in a Wireless Cooperative Communication System over Nakagami-m Fading Channels**
Ning Wang (University of Victoria, Canada); T. Aaron Gulliver (University of Victoria, Canada)

**3:20 PM - 3:40 PM**

**Afternoon Coffee Break**

**Room: ASC 120 Foyer**

**3:40 PM - 5:20 PM**

**Coding Theory and Information Theory II**

**Room: ASC 140**
Chair: Wei Yu (University of Toronto, Canada)

**Combinatorial Properties as Predictors for the Performance of the Sum-Product Algorithm**
Sotiria Lampoudi (UCSB, USA); John Brevik (California State, Long Beach, USA); Michael O'Sullivan (San Diego State University, USA)

**On the Equivalence of the Berlekamp-Massey and the Euclidean Algorithms for Algebraic Decoding**
Todd Mateer (Howard Community College, USA)

**Using Variable-Length Codes to Correct Insertion, Deletion and Substitution Errors**
Victor Butligieg (University of Malta, Malta)

**Streaming Codes for a Double-Link Burst Erasure Channel**
Devin Lui (University of Toronto, Canada); Ahmed Badr (University of Toronto, Canada); Ashish Khisti (University of Toronto, Canada)

**A New Secret Key Agreement Scheme in a Four-Terminal Network**
Parisa Babaheidarian (Sharif University of Technology, Iran); Somayeh Salimi (Sharif University of Technology, Iran); Mohammad Reza Aref (Sharif University of Tech., Iran)

**5:45 PM - 9:00 PM**

**Workshop Banquet**

**Room: UNC 200, University Centre Ball Room**

**Friday, May 20**

**8:00 AM - 9:00 AM**
Plenary Speaker: David Tse, University of California, Berkeley

Feedback for Interference Mitigation
Room: ASC 140
Chair: Julian Cheng (University of British Columbia, Canada)

9:00 AM - 10:40 AM

MIMO and Multi-Antenna Systems
Room: ASC 140
Chair: Sebastien Roy (Laval University, Canada)

Contribution of Multiplexing and Diversity to Ergodic Capacity of Spatial Multiplexing MIMO Channels at Finite SNR
Maher Arar (University of Ottawa, Canada); Abbas Yongacoglu (University of Ottawa, Canada)

Sparse Space Codes for Multi-Antenna Systems
Sagar Dhakal (Research In Motion, USA); Alireza Bayesteh (Research In Motion, Canada)

On Joint Detection and Channel Estimation over Rank-Deficient MIMO Links with Sphere Decoding
José L Lagunas Morales (Université Laval, Canada); Sebastien Roy (Laval University, Canada)

Low Complexity Piecewise Linear LLR Calculation for MIMO-BICM Systems
Chao Zheng (University of Alberta, Canada); Raman Yazdani (University of Alberta, Canada); Masoud Ardakani (University of Alberta, Canada)

RF Beamforming with Closely Spaced Antennas
William Chou (University of Toronto, Canada); Raviraj Adve (University of Toronto, Canada)

10:40 AM - 11:00 AM

Morning Coffee Break

11:00 AM - 12:40 PM

Interference Channels and Communication Systems
Room: ASC 140
Chair: Amin Mobasher (Research In Motion, Canada)
**Strong Interference Conditions for Multiple Access-Cognitive Interference Channel**  
Mahtab Mirmohseni (Sharif University of Technology, Iran); Bahareh Akhbari (Sharif University of Technology, Iran); Mohammad Reza Aref (Sharif University of Tech., Iran)

**Downlink Multi-User Interference Alignment in Two-Cell Scenario**  
Alireza Bayesteh (Research In Motion, Canada); Amin Mobasher (Research In Motion, Canada); Yongkang Jia (Research in Motion, Canada)

**Downlink Multi-User Interference Alignment in Compound MIMO-X Channels**  
Amin Mobasher (Research In Motion, Canada); Alireza Bayesteh (Research In Motion, Canada); Yongkang Jia (Research in Motion, Canada)

**Channel Estimation with Amplitude Constraint: Superimposed Training or Conventional Training?**  
Gongpu Wang (University of Alberta, Canada); Feifei Gao (Jacobs University, Bremen, Germany); Chintha Tellambura (University of Alberta, Canada)

**Spectrum Trading for Risky Environments in IEEE802.22 Cognitive Networks**  
Mohsen Nader Tehran (University of waterloo, Canada); Murat Uysal (Ozyegin University, Turkey)

12:40 PM - 2:00 PM

Lunch Break

2:00 PM - 3:40 PM

**Resource Allocation**

Room: ASC 140  
Chair: Derrick Wing Kwan Ng (University of British Columbia, Canada)

**Resource Allocation to Achieve Cross-Layer Metrics in Cooperative Networks**  
Ehsan Karamad (University of Toronto, Canada); Raviraj Adve (University of Toronto, Canada)

**Resource Allocation for Secure OFDMA Decode-and-Forward Relay Networks**  
Derrick Wing Kwan Ng (University of British Columbia, Canada); Robert Schober (University of British Columbia, Canada)

**Green Resource Allocation With QoS Provisioning for Cooperative Cellular Network**  
Umesh Phuyal (University of British Columbia, Canada); Satish Chandra Jha (University of British Columbia, Canada); Vijay Bhargava (University of British Columbia, Canada)

**Cross-Layer Resource Allocation Approach for Multi-hop Distributed Cognitive Radio Network**  
Satish Chandra Jha (University of British Columbia, Canada); Umesh Phuyal (University of British Columbia, Canada); Vijay Bhargava (University of British Columbia, Canada)

**Energy-Aware User Selection and Power Allocation for Cooperative Communication System with Guaranteed Quality-of-Service**  
Rajiv Devarajan (University of British Columbia, Canada); Satish Chandra Jha (University of British Columbia, Canada); Umesh Phuyal (University of British Columbia, Canada); Vijay Bhargava (University of British Columbia, Canada)