

# **2012 IEEE Information Theory Workshop**

**(ITW 2012)**

**Lausanne, Switzerland  
3 – 7 September 2012**



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**8:30 AM - 9:30 AM**

**PMo: Plenary Monday**

Chair: Suhas Diggavi (University of California Los Angeles, USA)

***An information-theoretic protocol compiler 1***

Amit Sahai (UCLA, USA)

**9:30 AM - 9:45 AM**

**BMoM: Break Monday Morning**

Coffee anyone?

**9:45 AM - 11:00 AM**

**SMoM: Spotlight Monday Morning**

Chair: Amos Lapidot (ETHZ, Switzerland)

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Yuval Kochman (The Hebrew University of Jerusalem, Israel); Gregory Wornell (Massachusetts Institute of Technology, USA)

***Reduced Complexity Window Decoding Schedules for Coupled LDPC Codes 20***

Najeeb Ul Hassan (Dresden University of Technology, Germany); Ali E. Pusane (Bogazici University, Turkey); Michael Lentmaier (Dresden University of Technology, Germany); Gerhard Fettweis (Technische Universität Dresden, Germany); Daniel J. Costello, Jr. (University of Notre Dame, USA)

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Emmanuel Abbe (EPFL, Switzerland); Shao-Lun Huang (Massachusetts Institute of Technology, USA); Emre Telatar (EPFL, Switzerland)

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Michael Langberg (Open University of Israel, Israel); Michelle Effros (California Institute of Technology, USA)

## 11:00 AM - 1:00 PM

### PoMoM: Posters Monday Morning

Poster Presentations associated to the Spotlight Monday Morning Session + Lunch

## 1:00 PM - 2:30 PM

### OMoA: Outreach Monday Afternoon -- Information Theoretic Cryptography

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**PoMoA: Posters Monday Afternoon**

Poster Presentations associated to the Spotlight Monday Aternoon Session.

**6:15 PM - 7:30 PM**

**WMoA: Welcome Reception -- Rolex Learning Center**

**Tuesday, September 4**

**8:30 AM - 9:30 AM**

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**9:45 AM - 11:00 AM**

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Lorenzo Keller (EPFL, Switzerland); Anh Le (University of California, Irvine, USA); Blerim Cici (UCI, USA); Athina Markopoulou (University of California, Irvine, USA); Christina Fragouli (EPFL, Switzerland); Hulya Seferoglu (Massachusetts Institute of Technology, USA)

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Daniela Tuninetti (University of Illinois at Chicago, USA)

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**11:00 AM - 1:00 PM**

**PoTuM: Posters Tuesday Morning**

Poster Presentations associated to the Spotlight Tuesday Morning Session + Lunch

**1:00 PM - 2:30 PM**

**OTuA: Outreach Tuesday Afternoon - Connections to Biology**

Chair: Suhas Diggavi (University of California Los Angeles, USA)

**A Cellular Solution to an Information Processing Problem N/A**

Garud Iyengar (Columbia University, USA); Madan Rao (National Center for Biological Sciences, USA)

**Understanding neural networks by controlling and evoking behavior N/A**

Sharad Ramanathan (Harvard, USA)

**How cells control their identity: Information theoretical concepts in gene regulatory networks N/A**

Erik Nimwegen (Universitaet Basel, Switzerland)

**2:30 PM - 2:45 PM**

**BTuA: Break Tuesday Afternoon**

**2:45 PM - 4:05 PM**

**STuA: Spotlight Tuesday Afternoon**

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**Information Theory of DNA Sequencing: General Statistics N/A**

David Tse (University of California at Berkeley, USA); Guy Bresler (University of California, Berkeley, USA); Ma'ayan Bresler (University of California at Berkeley, USA)

**An Efficient Sequential Predictor for Inference of Time-Varying Causal Interactions in Neural Processes N/A**

Todd P Coleman (University of California, San Diego, USA)

**Information Theoretic Approach to Classification and Closeness Testing N/A**

Jayadev Acharya (University of California, San Diego, USA); Hirakendu Das (University of California San Diego, USA); Ashkan Jafarpour (UCSD, USA); Alon Orlitsky (University of California, San Diego, USA); Shengjun Pan (University of California, San Diego, USA); Ananda Theertha Suresh (University of California, San Diego, USA)

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**PoTuA: Posters Tuesday Afternoon**

Poster Presentations associated to the Spotlight Tuesday Afternoon Session.

**Wednesday, September 5**

**8:30 AM - 9:30 AM**

**PWe: Plenary Wednesday**

Chair: Emre Telatar (EPFL, Switzerland)

**Distances between measures, relative entropy and measure concentration N/A**

Katalin Marton (Hungarian Academy of Sciences, Hungary)

**9:30 AM - 9:45 AM**

**BWeM: Break Wednesday Morning**

**9:45 AM - 10:45 AM**

**SWeM: Spotlight Wednesday Morning**

Chair: Sergio Verdú (Princeton University, USA)

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Chih-Chun Wang (Purdue University, USA)

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**PoWeM: Posters Wednesday Morning**

Poster Presentations associated to the Spotlight Wednesday Morning Session + Take Away Food

**12:45 PM - 6:00 PM**

**EWaE: Excursions -- Varying Duration**

**Thursday, September 6**

**8:30 AM - 9:30 AM**

**PTh: Plenary Thursday**

Chair: Hans-Andrea Loeliger (ETH Zurich, Switzerland)

**Efficient Polar Coding of Quantum Information** N/A

Joseph M Renes (ETH Zurich, Switzerland); Frederic Dupuis (ETH, Switzerland); Renato Renner (ETH Zurich, Switzerland)

**9:30 AM - 9:45 AM**

**BThM: Break Thursday Morning**

**9:45 AM - 11:00 AM**

**SThM: Spotlight Thursday Morning**

Chair: Ioannis Kontoyiannis (Athens University Econ & Business, Greece)

**Interactive Interference Alignment** N/A

Quan Geng (University of Illinois at Urbana-Champaign, USA); Pramod Viswanath (University of Illinois, Urbana-Champaign, USA)

**Low-complexity constructions of secret keys using polar coding** N/A

Emmanuel Abbe (EPFL, Switzerland)

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**11:00 AM - 1:00 PM**

**PoThM: Poster Thursday Morning**

Poster Presentations associated to the Thursday Monday Morning Session + Lunch

**1:00 PM - 2:30 PM**

**OThA: Outreach Thursday Afternoon - Machine Learning**

Chair: Andrea Montanari (Stanford University, USA)

**Iterative Ranking from Pair-wise Comparisons N/A**

Sahand Negahban (University of California, Berkeley, USA); Sewoong Oh (University of Illinois at Urbana-Champaign, USA); Devavrat Shah (Massachusetts Institute of Technology, USA)

**Spectral Clustering of Graphs in the Degree-Corrected Stochastic Block Model N/A**

Kamalika Chaudhuri (UCSD, Switzerland)

**Component-based Models for High-Dimensional Data: Graphical Models and Structurally Constrained Models N/A**

Pradeep Ravikumar (UT Austin, Switzerland)

**2:30 PM - 2:45 PM**

**BThA: Break Thursday Afternoon**

**2:45 PM - 4:05 PM**

**SThA: Spotlight Thursday Afternoon**

Chair: Pramod Viswanath (University of Illinois, Urbana-Champaign, USA)

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**4:05 PM - 6:00 PM**

**PoThA: Posters Thursday Afternoon**

Poster Presentations associated to the Spotlight Thursday Afternoon Session.

**7:00 PM - 10:00 PM**

**BaThA: Banquet -- Lausanne Palace**

**Friday, September 7**

**8:30 AM - 9:30 AM**

**PFr: Plenary Friday**

Chair: Christina Fragouli (EPFL, Switzerland)

***Hypothesis Testing in High-Dimensional Problems* N/A**

Adel Javanmard (Stanford University, USA); Andrea Montanari (Stanford University, USA)

**9:30 AM - 9:45 AM**

**BFrM: Break Friday Morning**

**9:45 AM - 11:00 AM**

**SFrM: Spotlight Friday Morning**

Chair: Nicolas Macris (EPFL, Switzerland)

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Shenghao Yang (Tsinghua University, P.R. China)

***Network Coding with Computation Alignment* 507**

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Pulkit Grover (Stanford University, USA)

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Peter Trifonov (Saint-Petersburg State Polytechnic University, Russia)

***On the Entropy of Sums of Bernoulli Random Variables via the Chen-Stein Method* 542**  
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## 11:00 AM - 1:00 PM

### PoFrM: Posters Friday Morning

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Hiroki Kanazawa (Graduate School of Information Science and Technology, The University of Tokyo, Japan); Kenji Yamanishi (The University of Tokyo, Japan)

***Relative Information Loss in the PCA* 562**

Bernhard C. Geiger (Graz University of Technology, Austria); Gernot Kubin (Graz University of Technology, Austria)

***A Robust RFPI-Based 1-Bit Compressive Sensing Reconstruction Algorithm* 567**

Amin Movahed (University of New South Wales, Australia); Ashkan Panahi (Chalmers University of Technology, Sweden); Giuseppe Durisi (Chalmers University of Technology, Sweden)

***Diversity versus Channel Knowledge at Finite Block-Length* 572**

Wei Yang (Chalmers University of Technology, Sweden); Giuseppe Durisi (Chalmers University of Technology, Sweden); Tobias Koch (Universidad Carlos III de Madrid, Spain); Yury Polyanskiy (MIT, USA)

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Sheng Yang (Supélec, France); Mari Kobayashi (Supélec, France); David Gesbert (Eurecom Institute, France); Xinping Yi (EURECOM, France)

***A refined analysis of the Poisson channel in the high-photon-efficiency regime* 582**

Ligong Wang (Massachusetts Institute of Technology, USA); Gregory Wornell (Massachusetts Institute of Technology, USA)

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Shahriar Etemadi Tajbakhsh (The Australian National University, Australia); Parastoo Sadeghi (The Australian National University, Australia)

***Two-Way Communication with Energy Exchange* 592**

Petar Popovski (Aalborg University, Denmark); Osvaldo Simeone (New Jersey Institute of Technology, USA)

***Retargeting LT Codes using XORs at the Relay* 597**

Shirish S Karande (TRDDC, India)

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Jun Muramatsu (NTT Corporation, Japan); Shigeki Miyake (NTT, Japan)

**Recurrent AMS One-Sided Channels 612**

Francois Simon (Telecom SudParis & Institut Telecom, France)

**Strong Secrecy in Arbitrarily Varying Wiretap Channels 617**

Igor Bjelaković (Technische Universität München, Germany); Holger Boche (Technical University Munich, Germany); Jochen Sommerfeld (Technische Universität München, Germany)

**Equivocations for the Simple Substitution Cipher with Erasure-Prone Ciphertext 622**

Willie K Harrison (Georgia Institute of Technology, USA); Steven McLaughlin (Georgia Institute of Technology, USA)

**Simultaneously Generating Multiple Keys and Multi-Commodity Flow in Networks 627**

Lifeng Lai (Worcester Polytechnic Institute, USA); Siu-Wai Ho (University of South Australia, Australia)

**2:15 PM - 4:00 PM**

**PoFrA1: Poster Friday Afternoon 1**

Poster Presentations associated to the Spotlight Friday Afternoon 1 Session + Break

**4:00 PM - 4:55 PM**

**SFrA2: Spotlight Friday Afternoon 2**

Chair: Olivier Lévêque (EPFL, Switzerland)

**Analog Network Coding in General SNR Regime: Performance of Network Simplification 632**

Samar Agnihotri (Indian Institute of Technology Mandi, India); Sidharth Jaggi (Chinese University of Hong Kong, Hong Kong); Minghua Chen (The Chinese University of Hong Kong, P.R. China)

**Golay Meets Hadamard: Golay-Paired Hadamard Matrices for Fast Compressed Sensing 637**

Lu Gan (Brunel University, United Kingdom); Kezhi Li (Imperial College London, United Kingdom); Cong Ling (Imperial College London, United Kingdom)

**Compressing multisets using tries 642**

Vincent Gripon (Telecom Bretagne, France); Michael Rabbat (McGill University, Canada); Vitaly Skachek (McGill University, Canada); Warren Gross (McGill University, Canada)

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**Aspect of Security in the Cognitive Relay Assisted Interference Channels 652**

Md. Zahurul Islam Sarkar (The University of Edinburgh, United Kingdom); Tharmalingam Ratnarajah (The University of Edinburgh, United Kingdom)

**On The Achievable Rate Region of a New Gaussian Wiretap Channel With Side Information 657**

Hamid Bafghi (Shahed University, Iran); Babak Seyfe (Shahed University, Iran); Mahtab Mirmohseni (Sharif University of Technology, Iran); Mohammad Reza Aref (Sharif University of Tech., Iran)

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**Limited Feedback for Interference Alignment in the K-user MIMO Interference Channel 667**

Mohsen Rezaee (Vienna University of Technology, Austria); Maxime Guillaud (Vienna University of Technology, Austria)

**Uniform and Non-Uniform Delay-Rate Tradeoffs in Partial Ergodic Interference Alignment 672**

Henning Maier (RWTH Aachen University, Germany); Rudolf Mathar (RWTH Aachen University, Germany)

**Achievable Rate Regions for Compound Multiple Access Channel with Channel State Information 677**

Mostafa Monemizadeh (Ferdowsi University of Mashhad, Iran); Ghosheh Abed Hodtani (Ferdowsi University of Mashhad, Mashhad, Iran)

**The Analog Formulation of Sparsity implies Infinite Divisibility and rules out Bernoulli-Gaussian Priors 682**

Arash Amini (EPFL, Switzerland); Ulugbek S. Kamilov (EPFL, Switzerland); Michael Unser (EPFL, Switzerland)

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**PoFrA2: Posters Friday Afternoon 2**

Poster Presentations associated to the Spotlight Friday Afternoon 2 Session.