

2012 7th International Symposium on Turbo Codes and Iterative Information Processing

(ISTC 2012)

**Gothenburg, Sweden
27 – 31 August 2012**



**IEEE Catalog Number: CFP12TCR-PRT
ISBN: 978-1-4577-2114-4**

Program

Mon 1: Session Mon 1

From Mathematics to Physics: The Task of Building Efficient and Effective Iterative Error Control Decoders (Invited Talk)

Christian Schlegel (University of Alberta, Canada)

Efficient Iterative Decoding of LDPC in the Presence of Strong Phase Noise

Shachar Shayovitz (University of Tel Aviv, Israel); Dan Raphaeli (Tel Aviv University, Israel)

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Pairwise joint probability propagation in BICM-ID

Florence Alberge (University Paris-Sud, France)

pp. 6-10

Decentralized Power Control for Random Access with Iterative Multi-User Detection

Chongbin Xu (City University of Hong Kong, Hong Kong); Peng Wang (The University of Sydney, Australia); Sammy Chan (City University of Hong Kong, Hong Kong); Li Ping (City University of Hong Kong, Hong Kong)

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Mon 2: Session Mon 2

Windowed Iterative Source-Channel Decoding with Delay Constraints

Laurent Schmalen (Alcatel-Lucent, Germany); Marc Adrat (Fraunhofer FKIE / KOM, Germany); Thorsten Clevorn (Intel Mobile Communications, Germany); Peter Vary (RWTH Aachen University, Germany)

pp. 16-20

A 2.15Gbit/s Turbo Code Decoder for LTE Advanced Base Station Applications

Thomas Ilseher (University of Kaiserslautern, Germany); Frank Kienle (University of Kaiserslautern, Germany); Christian Weis (University of Kaiserslautern, Germany); Norbert Wehn (University of Kaiserslautern, Germany)

pp. 21-25

Design and implementation of a near maximum likelihood decoder for Cortex codes

Cédric Marchand (Lab-STICC Université de Bretagne Sud, France); Mohamed Hammouda (Université de Bretagne Sud, France); Yvan Eustache (Université de Bretagne Sud, France); Laura Conde-Canencia (Université de Bretagne Sud, France); Emmanuel Boutillon (Université de Bretagne Sud, France)

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Tue 1: Session Tue 1

Invited Talk by Ericsson

The Diversity Equivalence Theorem and Applications (Invited Talk)

Joseph Jean Boutros (Texas A&M University at Qatar, Qatar)

PO 1a: Session PO 1a

Utilization of 2-D Markov Source Correlation using Block Turbo Codes

Mohd Azri Mohd Izhar (Universiti Teknologi Malaysia, Malaysia); Norsheila Faisal (Universiti Teknologi Malaysia & Faculty of Electrical Engineering, Malaysia); Xiaobo Zhou (Japan Advanced Institute of Science and Technology, Japan); Khoirul Anwar (Japan Advanced Institute of Science and Technology, Japan); Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan)

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Fast Simulation of Turbo Codes on GPUs

Stefano Chinnici (Ericsson Telecomunicazioni S.p.A., Italy); Paolo Spallaccini (Ericsson Telecomunicazioni SpA, Italy)

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Synchronization from Deletions Through Interactive Communication

Sadegh Tabatabaei Yazdi (UCLA, USA); Lara Dolecek (UCLA, USA)

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ML vs. BP Decoding of Binary and Non-Binary LDPC Codes

Stefan Scholl (University of Kaiserslautern, Germany); Frank Kienle (University of Kaiserslautern, Germany); Michael Helmling (University of Kaiserslautern, Germany); Stefan Ruzika (University of Kaiserslautern, Germany)

pp. 71-75

Equalization of MIMO-ISI Channels based on Gaussian Message Passing in Factor Graphs

Werner Haselmayr (Johannes Kepler University Linz, Austria); Bernhard Eitzlinger (Johannes Kepler University Linz, Austria); Andreas Springer (Johannes Kepler University Linz, Austria)

pp. 76-80

A Memory Reduced Decoding Scheme for Double Binary Convolutional Turbo Code Based on Forward Recalculation

Ming Zhan (University of Electronic Science and Technology of China, P.R. China); Liang Zhou (UESTC, P.R. China)

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Importance Sampling for Performance Estimation of LDPC Codes over Rayleigh Fading Channels

Seok-Ki Ahn (Pohang University of Science and Technology, Korea); Kyeongcheol Yang (Pohang University of Science and Technology (POSTECH), Korea)

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Bidirectional Broadcasting by Using Multi-Edge Type LDPC Convolutional Codes

Zhongwei Si (Royal Institute of Technology, Sweden); Ragnar Thobaben (KTH Royal Institute of Technology, Sweden); Mikael Skoglund (KTH Royal Institute of Technology, Sweden); Tobias J. Oechtering (KTH Royal Institute of Technology & School of Electrical Engineering, EE, Sweden)

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Three-way Relaying Systems Using Iterative Spatial Demapping

Khoirul Anwar (Japan Advanced Institute of Science and Technology, Japan); Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan)

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NB-LDPC: Absorbing Set and Importance Sampling

Angelo Poloni (STMicroelectronics, Italy); Stefano Valle (STMicroelectronics, Italy); Stefano Vincenti (ST Microelectronics, Italy)

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Signal Recovery Performance of the Interval-Passing Algorithm

Vida Ravanmehr (University of Arizona, USA); Ludovic Danjean (ETIS - ENSEA/Univ Cergy-Pontoise/CNRS & Dept of Electrical and Computer Engineering, University of Arizona, France); Bane Vasić (University of Arizona, USA); David Declercq (ETIS lab. ENSEA/Cergy University/CNRS UMR, France)

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Adapted scheduling of QC-LDPC decoding for multistandard receivers

Jean Dion (France Telecom, France); Marie-Helene Hamon (France Telecom, France); Pierre Pénard (France Telecom, France); Matthieu Arzel (Telecom Bretagne, France); Michel Jezequel (Telecom Bretagne, France)

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Analysis of High Order Recurrent Neural Networks for Analog Decoding

Mohamad Mostafa (University of Ulm, Germany); Werner G. Teich (Ulm University, Germany); Juergen Lindner (Uni Ulm, Germany)

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Tue 2: Session Tue 2

New quasi-cyclic LDPC codes with girth at least eight based on Sidon sequences

Zhang (Xidian University, P.R. China); Rong Sun (Xidian University, P.R. China); Xinmei Wang (Xidian University, P.R. China)

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A Space-Time Redundancy Technique for Embedded Stochastic Error Correction

Chris James Winstead (Utah State University, USA); Yangyang Tang (Université de Bretagne Sud, USA); Emmanuel Boutillon (Université de Bretagne Sud, France); Christophe Jégo (IMS CNRS Laboratory & IPB ENSEIRB-MATMECA, France); Michel Jezequel (Telecom Bretagne, France)

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Short Low-Rate Non-Binary Turbo Codes

Gianluigi Liva (DLR - German Aerospace Center, Germany); Balazs Matuz (German Aerospace Center (DLR), Germany); Enrico Paolini (DEI, University of Bologna, Italy); Marco Chiani (University of Bologna, Italy)

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Reaching Capacity with Spatial Coupling (Invited Talk)

Thomas Richardson (Qualcomm Flarion Inc., USA)

Spatially Coupled LDPC Codes for Two-User Decode-and-Forward Relaying

Stefan Schwandter (Vienna University of Technology, Austria); Alexandre Graell i Amat (Chalmers University of Technology, Sweden); Gerald Matz (Vienna University of Technology, Austria)

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A Simple Proof of Threshold Saturation for Coupled Scalar Recursions

Arvind Yedla (Texas A&M University, USA); Yung-Yih Jian (Texas A&M University, USA); Phong S Nguyen (Texas A&M University, USA); Henry D Pfister (Texas A&M University, USA)

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Utilization of 2-D Markov Source Correlation using Block Turbo Codes

Mohd Azri Mohd Izhar (Universiti Teknologi Malaysia, Malaysia); Norsheila Fisal (Universiti Teknologi Malaysia & Faculty of Electrical Engineering, Malaysia); Xiaobo Zhou (Japan Advanced Institute of Science and Technology, Japan); Khoirul Anwar (Japan Advanced Institute of Science and Technology, Japan); Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan)

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Elastic Codes (Invited Talk)

Michael Luby (Qualcomm, Inc, USA)

Random clique codes

Vincent Gripon (Telecom Bretagne, France); Vitaly Skachek (McGill University, Canada); Warren Gross (McGill University, Canada); Michael Rabbat (McGill University, Canada)
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Near Shannon Limit Precoded Concatenated Zigzag Codes

Sheng Tong (Xidian University, P.R. China); Li Ping (City University of Hong Kong, Hong Kong); Bao-Ming Bai (Xidian University, P.R. China)
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Invited Talk by Huawei Sweden

The Marriage Between Random Access and Codes on Graphs (Invited Talk)

Marco Chiani (University of Bologna, Italy)

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A Low-complexity Tree Search Detection Algorithm for Superposition Modulation

Dapeng Hao (University of Kiel, Germany); Peter A. Hoeher (University of Kiel, Germany)
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High-Rate QC LDPC Codes of Short and Moderate Length with Good Girth Profile

Irina Bocharova (St. Petersburg University of Information Technologies, Mechanics and Optics, Russia); Florian Hug (Lund University, Germany); Rolf Johannesson (Lund University, Sweden); Boris Kudryashov (St. Petersburg University of Information Technology, Mechanics and Optics, Russia)
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Spatially Coupled Protograph-Based LDPC Codes for Incremental Redundancy

Walter Nitzold (Technische Universität Dresden, Germany); Michael Lentmaier (Dresden University of Technology, Germany); Gerhard Fettweis (Technische Universität Dresden, Germany)
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A Novel Soft Equalization for MIMO Systems with Recycled Extrinsic Information

Onur Oğuz (Comsis SAS, France)
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Generalized LDPC Code With Single-Parity-Check Product Constraints At Super Check Nodes

Yue Min (Hong Kong Polytechnic University, Hong Kong); Francis C.M. Lau (The Hong Kong Polytechnic University, Hong Kong); Chi Kong Tse (Hong Kong Polytechnic University, Hong Kong)
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Yong Jin Daniel Kim (McGill University, Canada); Jan Bajcsy (McGill University, Canada)
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Kai Zhang (Sun Yat-sen University, P.R. China); Haiqiang Chen (Sun Yat-sen University, Sweden); Xiao Ma (Sun Yat-sen University, P.R. China)
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Reducing the memory for iteration-exchanged information and border future metrics in the HomePlug AV turbo decoder implementation

Lorenzo Guerrieri (Dora Spa, STMicroelectronics Group, Italy); Paola Bisaglia (DORA S.p.A., STMicroelectronics Group, Italy); Maurizio Martina (Politecnico di Torino, Italy); Guido Maserà (Politecnico di Torino, Italy)
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Absorbing Sets and Cycles

Gottfried Lechner (University of South Australia, Australia); Sarah J Johnson (University of Newcastle, Australia)
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Low-Density Hybrid-Check Coded Superposition Mapping in BICM-OFDM

Zhenyu Shi (University of Kiel, Germany); Peter A. Hoeher (University of Kiel, Germany)
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Low ML-detection complexity, adaptive 2x2 STBC, with powerful FEC codes

Ammar El Falou (Telecom Bretagne, France); Charlotte Langlais (Télécom Bretagne, France); Charbel Abdel Nour (Institut Telecom - Telecom Bretagne, France); Catherine Douillard (Institut Telecom - Telecom Bretagne, France)
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Compress-and-Forward in the Multiple-Access Relay Channel: with or without Network Coding?

Andreas Winkelbauer (Vienna University of Technology, Austria); Norbert Goertz (Vienna University of Technology, Austria); Gerald Matz (Vienna University of Technology, Austria)
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Iterative Collision Resolution for Slotted ALOHA: An Optimal Uncoordinated Transmission Policy

Krishna Narayanan (Texas A&M University, USA); Henry D Pfister (Texas A&M University, USA)

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Distributed Iterative Processing for Interference Channels with Receiver Cooperation

Mihai Alin Badiu (Technical University of Cluj-Napoca & Aalborg University, Romania);
Carles Navarro Manchón (Aalborg University, Denmark); Vasile Bota (Technical
University of Cluj Napoca, Romania); Bernard Henri Fleury (Aalborg University,
Denmark)

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Wed 3: Session Wed 3

From Communication Engineering to Biology (Invited Talk)

Gerard Battail (Ecole nationale superieure des telecommunications, Paris, (retired),
France)

Looking at the Neocortex as a Distributed Decoder (Invited Talk)

Claude Berrou (Ecole Nationale Superieure des Telecommunications de Brest,
France)

PO 2b: Session PO 2b

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Local-Optimality Guarantees for Optimal Decoding Based on Paths

Nissim Halabi (School of Electrical Engineering, Tel-Aviv University, Israel); Guy Even (Tel-Aviv University, Israel)
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Analysis and Optimization of Iteration Schedules for LDPC Coded Modulation and Detection

Laurent Schmalen (Alcatel-Lucent, Germany); Stephan ten Brink (Alcatel-Lucent, Bell Laboratories, Germany); Andreas Leven (Alcatel-Lucent, Germany)
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Irregular Repeat Accumulate Codes with Few Iterations for the Binary Adder Channel

Guangsong Wang (University of South Australia, Australia); Ingmar Land (University of South Australia, Australia); Alex Grant (University of South Australia, Australia)
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Iterative Equalization in Non-Linear Satellite Channels

Daniel N. Liu (Northrop Grumman Aerospace System, USA); Michael Fitz (University of California Los Angeles, USA)
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Thu 1: Session Thu 1

Turbo Equalization (Invited Talk)

Andrew C. Singer (University of Illinois at Urbana Champaign, USA)

Comparison of LDPC Block and LDPC Convolutional Codes Based on their Decoding Latency

Najeeb Ul Hassan (Dresden University of Technology, Germany); Michael Lentmaier (Dresden University of Technology, Germany); Gerhard Fettweis (Technische Universität Dresden, Germany)
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Ultra Low Complexity Soft Output Detector for Non-Binary LDPC Coded Large MIMO Systems

Puripong Suthisopapan (Khon Kaen University & Tokyo Institute of Technology, Thailand); Anupap Meesomboon (Khon Kaen University, Thailand); Kenta Kasai (Tokyo Institute of Technology, Japan); Virasit Imtawil (, Thailand)
pp. 230-234

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Sponsored by Orange

Performance comparisons of different iterative equalizers in LTE system (Invited Talk)

Yang Liu (SEQUANS Communications, France); Serdar Sezginer (Sequans, France)

Adaptive Complexity MIMO Turbo Receiver Applying Turbo Demodulation

Salim Haddad (Telecom Bretagne, France); Amer Baghdadi (Télécom Bretagne, France); Michel Jezequel (Telecom Bretagne, France)
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Architectural challenges for high-throughput iterative MIMO systems (Invited Talk)

Christina Gimmier-Dumont (University of Kaiserslautern, Germany); Frank Kienle (University of Kaiserslautern, Germany)

Advanced turbo-receivers: opportunities and remaining challenges for an integration in WIFI and LTE products (Invited Talk)

Laurent Cariou (france telecom R&D, France)

Fri 1: Session Fri 1

Iterative algorithms for vote aggregation (Invited Talk)

Olgica Milenkovic (University of Illinois, USA)

Interleaver Design for Spectrally-Efficient Bit-Interleaved LDPC-Coded Modulation

Stefan Nowak (TU Dortmund University, Germany); Ruediger Kays (Dortmund University of Technology, Germany)

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Fri 2: Session Fri 2

On Fault Tolerant Decoding of Turbo Codes

Jan Geldmacher (TU Dortmund University, Germany); Jürgen Götze (TU Dortmund University, Germany)

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Recursive Flexible Convolutional Encoders for Parallel Concatenation

Alexandros Katsiotis (National and Kapodistrian University of Athens, Greece);
Nicholas Kalouptsidis (National and Kapodistrian University of Athens, Greece);
Panagiotis Rizomiliotis (University of the Aegean, Greece)

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A Puncturing Algorithm for Rate-Compatible LDPC Convolutional Codes

Hua Zhou (Vienna University of Technology, Austria); David G. M. Mitchell (University of Notre Dame, USA); Norbert Goertz (Vienna University of Technology, Austria);
Daniel J. Costello, Jr. (University of Notre Dame, USA)

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Improved Message Passing Techniques in Fast Correlation Attacks on Stream Ciphers

Martin Ågren (University of Lund, Sweden); Martin Hell (Lund University, Sweden);
Thomas Johansson (Lund University, Sweden); Carl Löndahl (Lund University, Sweden)

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