

Workshop on Polar Coding in Wireless Communications: Theory and Implementation



Call for Papers

Workshop Chairs

Warren J. Gross

McGill University, Canada

Alexander Vardy

University of California San Diego, USA

Ingmar Land

Huawei Technologies, France

Jean-Claude Belfiore

Huawei Technologies, France

Emanuele Viterbo

Monash University, Australia

Emmanuel Boutillon

Université de Bretagne Sud, France

Keynote Speakers

Erdal Arikan

Bilkent University, Turkey

Wen Tong

Huawei Technologies, Canada

Rüdiger Urbanke

EPFL, Switzerland

Features

- Full-day workshop
- Presentation sessions
- Poster sessions
- Panel discussion

Important Dates

Paper submission deadline:
15 October 2016

Notification of acceptance:
15 December 2016

Camera-ready submission:
12 January 2017

The Workshop on Polar Coding in Wireless Communications will be held in San Francisco, CA, in conjunction with the IEEE WCNC 2017, March 19-22, 2017.

Channel coding in 5G and future wireless networks is facing novel challenges due to extended service classes and scenarios, as compared to existing networks. These have very different requirements on the code lengths and rates, as well as throughput and decoder complexity. Turbo codes and low-density parity-check codes, the currently dominating code classes, perform well in some of these regimes but fail to cover the whole range.

The discovery of channel polarization and polar codes is widely regarded as a major breakthrough in coding theory. Polar codes have many features that make them promising candidates for 5G and future wireless networks. Specifically, rate-adaptation is naturally provided, length adaptation may be accomplished by puncturing and shortening; fast successive-cancellation decoding and powerful list decoding is available; and high-throughput hardware implementations have been proposed, utilizing the extremely regular recursive structure of polar codes that greatly facilitates their implementation. Furthermore, there are promising generalizations that go beyond the original polar code constructions, and there are various options to provide for incremental redundancy and hybrid ARQ. For all these reasons, polar codes are currently investigated as candidates for channel coding in 5G.

Over the past few years, there has been great interest in polar codes from both academia and industry. However, despite the excellent progress in the theory and practice of polar coding, many problems are still open. This workshop will bring together key researchers from industry and academia to showcase the state-of-the-art in polar coding and identify the remaining research problems.

The workshop will cover theory and code design as well as decoding algorithms and hardware implementation. Specific **topics of interest** include, but are not limited to, the following:

- Construction and design of polar codes
- Hardware implementation of polar decoders
- Incremental redundancy and HARQ with polar codes
- Fast and high-performance decoding algorithms
- Length-adaptation of polar codes
- Polar-coded modulation
- Polar coding for fading channels
- Performance of polar codes at finite lengths
- Non-binary polar codes
- Structural properties of polar codes
- Polar codes and Reed-Muller codes
- Applications of polar codes

The workshop accepts only novel previously unpublished contributions. All submissions should be in English, with a maximum length of five printed pages (10 point font) including figures, using standard double-column IEEE templates.

For more information about the workshop and detailed submission instructions, please refer to the WCNC 2017 conference website: wcnc2017.ieee-wcnc.org.