NEWCOM++ 2010 Winter School on

Iterative Techniques in Wireless Communications

24-26 February 2010, Department of Communication Technology, Aalborg University, Aalborg, Denmark

The Department of Communication Technology of Aalborg University, Aalborg, Denmark and the Chair of Wireless Communications of Poznan University of Technology, Poznan, Poland are pleased to announce the

NEWCOM++ 2010 Winter School on *Iterative Techniques in Wireless Communications*
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Aim of the School and program: Introduction of turbo codes together with their iterative decoding technique has opened new perspectives on digital receiver design. The idea of passing information back and forth between component decoders in a turbo decoder (called iterative processing or turbo processing) has found widespread applications not only in error control, but also in other areas of digital communications: detection, interference suppression, equalization and synchronization. Nowadays iterative processing has become prevalent in state-of-the-art receiver design.
The aim of the School is to give an intensive course on principles, advances in theory and implementation aspects of wireless iterative receivers. The course covers a broad range of aspects of theory and practice of iterative processing, including the following topics:

- Model-based signal processing using factor graphs
- Graphical models and their applications to iterative receiver design
- Connection between graphical models and information geometry
- Towards a unified view of message passing techniques
- Variational message passing and its application to wireless receivers
- Reduced complexity decoding algorithms for iterative receivers
- Iterative parameter estimation, the EM-algorithm
- Bit-Interleaved Coded Modulation with Iterative Decoding (BICM-ID) – Analysis, interpretations, optimization
- Xampling: Sub-Nyquist sampling for sparse multi-band receivers
- Turbo decoder architectures: throughput and complexity tradeoffs

Lecturers/Contributors of lectures:

- H.-A. Loeliger, ETH Zürich
- A.O. Berthet, Supelec
- G. Matz, S. Schwandter, Vienna University of Technology
- C. Navarro, G.E. Kirkelund, B. Fleury, Aalborg University
- E. Riegler, Vienna University of Technology
- H. Steendam, University of Gent
- Y. Eldar, Z. Ben-Haim, Technion
- P. Tyczka, M. Sybis, Poznan University of Technology
- P. Duhamel, Z. Naja, Supelec

- A. Svensson, A. Alvarado, Chalmers University of Technology
- M. Martina, Politecnico di Torino

Intended audience: Graduate students and researchers with a solid background in Information Theory, Coding Theory and Wireless Communications.

Contact persons:

- Registration and accommodation: Caroline Breck (cbm@es.aau.dk).
- Technical programme: Gunvor E. Kirkelund (gunvor@es.aau.dk).

School web-site:
http://www.es.aau.dk/sections/navigation_and_communications_navcom/winter_school_2010_iterative_techniques/