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Prof. Alister Burr BSc (Soton), PhD (Bristol), MIET, MIEEE, CEng

Professor of Communications

Email: [alister.burr@york.ac.uk](mailto:alister.burr@york.ac.uk)

Tel: +44 (0)1904 32 2352

Fax: +44 (0)1904 32 2335

Research Area: [Communications and Signal Processing Group](#)

Areas of Expertise: MIMO Systems, Modulation and Coding, Wireless Systems, Physical Layer Network Coding, Iterative Techniques



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Alister Burr was born in London, U.K, in 1957. He received the BSc degree in Electronic Engineering from the University of Southampton, U.K in 1979 and the PhD from the University of Bristol in 1984. Between 1975 and 1985 he worked at Thorn-EMI Central Research Laboratories in

London. In 1985 he joined the Department of Electronics at the University of York, U.K., where he has been Professor of Communications since 2000. His research interests are in wireless communication systems, especially modulation and coding and including turbo-codes and turbo-processing techniques, and MIMO, cooperative systems and physical layer network coding. He has published more than 150 papers in refereed international conferences and journals, and is the author of "Modulation and Coding for Wireless Communications" (published by Prentice-Hall/PHEI). In 1999 he was awarded a Senior Research Fellowship by the U.K. Royal Society, and in 2002 he received the J. Langham Thompson Premium from the Institution of Electrical Engineers. He has also held a visiting professorship at Vienna University of Technology, and given numerous invited presentations, including at the First International Conference on Turbocodes and Related Topics, and a keynote at the first WCNC event (now IEEE WiCom), Wuhan, China. He is currently chair, working group 1, of the European COST 2100 programme "Pervasive Mobile

and Ambient Wireless Communications”.

## Current research

### Distributed and virtual MIMO

- Physical layer network coding
- Cooperative diversity and distributed space time block codes;
- Distributed spatial multiplexing;
- Distributed beamforming;
- Architectures for fifth generation (5G) wireless systems

### Turbo-codes and iterative techniques

- Optimisation of iterative systems using EXIT charts
- Iterative detection of bit-interleaved and multi-level coded modulation (BICM/MLCM);
- Iterative joint MIMO channel estimation and decoding;
- Iterative decoding of space-frequency block coding in OFDM;
- Iterative joint multi-user detection or interference cancellation and decoding for CDMA and TDMA systems.

### Broadband MIMO wireless communications

- Waveforms for 5G wireless systems
- MIMO channel modelling for wideband and time-variant channels;
- Antenna design and modelling for MIMO;
- Turbo-coded spatial multiplexing for high capacity and high diversity;
- Differential MIMO;
- MIMO precoding for 3GPP LTE and WiMAX;
- Spatio-temporal precoding for multi-user MIMO-OFDMA using tensor notation

Publications information is available via the [York Research Database](#)

## External activities

Associate Editor, IEEE Communications Letters, 2008-2011

Chair, Working Group 2 (on Radio Signalling) of [COST Action IC1004](#): "Cooperative Radio Communications for Green Smart Environments"

## Awards

Best paper award, European Wireless, Poznan, April 2012: Dong Fang and Alister Burr "Rotationally Invariant Coded Modulation for Physical Layer Network Coding in Two-

way Relay Fading Channel"

J. Langham Thompson  
Premium, IEE, 2002 for  
paper "Turbo-codes: the  
ultimate error-control codes?"

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Department of Electronics, University of York, Heslington, York, UK. YO10 5DD  
Tel: +44 (0)1904 32 2361 | Fax: +44 (0)1904 32 2335.

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