

Editorial

Antenna Systems and Propagation for Future Wireless Communications

Over the past few decades, mobile communications technology has evolved at a rapid pace. Wireless communications pervades our daily lives and is widely believed to have a bright future. System concepts for wireless systems beyond third-generation (3G) technology are currently being developed. Such concepts include MIMO and ad-hoc communications, the deployment of multiple antenna systems, broadband and ultra-wideband (UWB) wireless technology, as well as key policies being enacted on spectrum usage. A fundamental understanding of the wave propagation and antenna system design is required to ensure efficient design and deployment of such future wireless technologies. It is with great pleasure that we introduce this special issue on this theme.

The authors in this issue cover diverse fields expected from this theme. MIMO system research is strong and is being applied to different systems technology fields such as ultra-wide band communication. Several papers in this issue provide detailed insight into MIMO and likely performance limitations which will occur in practice. Concepts of collaborative beam forming and cooperative communication systems open interesting new areas for improving system performance through intelligent utilisation of antenna systems. On the other hand, contributions covering propagation in such applications as body area channels provides a timely insight into these developing application areas.

We would like to thank all the authors of this special issue for what we consider is an interesting and informative set of papers in an area of intense research activity.

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Wasim Q. Malik is a Postdoctoral Fellow at the Massachusetts Institute of Technology, USA. He received the DPhil degree from the University of Oxford, UK, in 2005. From 2005 to 2007, he was a Research Fellow at the University of Oxford and a Junior Research Fellow in Science at Wolfson College, Oxford. He was awarded the ESU Lindemann Science

Fellowship 2007, the Best Paper Award at the ARMMS RF & Microwave Conference 2006, and the Association for Computing Machinery Recognition of Service Award in 1997. He is an editor of the book *Ultra-Wideband Antennas and Propagation for Communications, Radar and Imaging* (UK: Wiley, 2006). He routinely serves on the organizing and technical program committees of

various international conferences. His current research interests include wideband communications, multiple-antenna systems, and biomedical signal processing. He has published in excess of 60 papers in refereed journals and conferences.



Ben Allen received his PhD degree from the Centre for Communications Research, University of Bristol, Bristol, UK in 2001. Since then he has continued his research into wireless communications. In 2003 he became a lecturer at the Centre for Telecommunication Research, Kings College, London and was a founder member of the UWB research group. Ben is

now with the department of Engineering Science, University of Oxford. He has published numerous journal and conference papers and two books in the areas of wireless communications, antennas systems and propagation and was awarded the IET's J. Langham Thompson premium for one of his papers. He is a Chartered Engineer, Fellow of the Institute of Engineering Technology and a Senior Member of the IEEE. He is also an active member of the IET's Antennas and Propagation Professional Networks Executive Committee.



Professor David Edwards is Professor of Engineering Science and Fellow of Wadham College Oxford. He holds a BSc, MSc and PhD in Physics, the Physics of Materials and Engineering from the University of Bristol, UK. After 12 years spent in industry (British Telecom), he returned to academia and has been an academic for 22 years (4 years at Bristol University,

18 years at Oxford University). He has been in receipt of a number of awards and prizes in recognition of his work and has a strong record of innovation in communications systems, techniques and technologies. He has published in excess of 300 publications during his time as an academic and has been extremely well supported by funding from research councils, industry and government agencies. Current research areas include communications, antennas and propagation, electromagnetics, ad hoc networks, MIMO systems and materials for electromagnetic applications. Professor Edwards has been awarded a number of patents and several have appeared as licensed commercial products. He has acted as a consultant to a large number of industrial organisations during his career, and has served on a number of national and international

committees relating to the antennas and propagation fields, and continues to act as an industrial consultant in these areas. Prof. Edwards is a Chartered Engineer, a Fellow of the IET and a Fellow of the Royal Astronomical Society.



Professor Tony Brown joined University of Manchester in May 2003 and now heads the Microwave and Communication Systems Group, having had over 30 years of research and development into radar and communication antennas and systems. Starting work at GEC-Marconi Research Laboratories (1974) where he worked on satellite communications and phased array

radar. Between 1976 and 1980 he was with STL (Harlow) working on a variety of communications topics, including microstrip, adaptive and digital beam forming array antennas. He was the first Racal Research Fellow on Telecommunications at University of Surrey in 1980. He joined Racal full time in 1983. In 1987 Professor Brown founded Easat, a SME providing radar antennas and sensor systems. Professor Brown was a founding member of the EPSRC Communications College. He is a Fellow of the IET and of the Institute of Mathematics and its Applications (IMA) and a Senior Member of the IEEE. Professor Brown has worked as a consultant to a number of international organisations and is a past member of the Technical Advisory Commission to the Federal Communication Commission (FCC), USA and a current UK representative to the European Union COST ASSIST initiative.