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PHD COURSE:

Metamaterials and Material-by-Design for Electromagnetic Applications

Speaker: **Prof. Yang Hao**
(Queen Mary University of London, UK)

Dates: 19-20-21 July 2016

Location: Room LEVICO – Polo Scientifico F. Ferrari – Povo

Duration: 20 Hours

Note: The seminar will be held in English

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Recent breakthroughs in the theory of Transformation Electromagnetics, such as the possibilities concerning cloaking and invisibility, have caught both the scientific and popular imagination, and have stimulated a huge growth in related research around the world. The potential of the underlying Transformation Electromagnetics approaches however have much wider applicability than cloaking alone, in arguably more important applications that span communications, energy transfer, sensors and security. However, theory and concepts are outstripping practical demonstration and testing, leading to a mismatch in what may be theorised and computed and what can be realised for impact in society and commerce. In this short course, the history of research on transformation electromagnetics and metamaterials for achieving the invisibility will be reviewed. Potentials and physical limitations of metamaterials will be demonstrated through numerical simulations and microwave experiments. The roadmap for developing radically novel devices based on transformation electromagnetics and metamaterials engaging UK leading theorists, modellers and material scientists will be discussed.

- **About the Speaker**

Professor Yang Hao received the Ph.D. degree from the Centre for Communications Research (CCR) at the University of Bristol, U.K. in 1998. In May 2000, he joined the Antenna and Electromagnetics Group, Queen Mary, University of London, London, U.K. first as a lecturer and was promoted to Reader in 2005 and to Professor in 2007.
Professor Hao currently leads a £4.6M EPSRC QUEST programme grant on transformation electromagnetics and microwave metamaterials. He is a management board member of Cambridge Graphene Center, which has attracted over £25M funding from UK EPSRC. Professor Hao is active in a number of areas, including computational electromagnetics, microwave metamaterials and transformation electromagnetics, antennas and radio propagation for body centric wireless networks, active antennas for millimeter/sub-millimeter applications and photonic integrated antennas, graphene and nanomicrowave.
rofessor Hao has published over 140 journal papers and he was a co-editor and co-author of the books Antennas and Radio Propagation for Body-Centric Wireless Communications (Boston, MA, USA: Artech House, 2006, 2012), and FDTD Modelling of Metamaterials: Theory and Applications (Boston, MA, USA: Artech House, 2008), respectively. Prof. Hao is an Editor-in-Chief for the IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS and EPJ Applied Metamaterials. He was an Associate Editor for the IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS, IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION during 2008-2013, and also a Co-Guest Editor for the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION in 2009. He was elected as a Fellow of the ERA Foundation in 2007, Fellow of the IET in 2010 and Fellow of the IEEE in 2013. He is a holder of the Royal Society Wolfson Research Merit Award between 2013 and 2018.