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MRI at ultra high field

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ABSTRACT OF THE TALK

The availability of magnetic resonance (MR) scanners operating at 7T and above has already proved beneficial for MR imaging and spectroscopy of the human brain and promises similar benefits in the human body. These advantages result from the increases with the magnetic field of the intrinsic signal-to-noise ratio, blood oxygenation level dependent (BOLD) contrast, which forms the basis of the vast majority of functional MR imaging (MRI) experiments, and chemical shift dispersion.

These gains can be exploited in improving the spatial and/or temporal resolution of anatomical and functional MRI experiments. Current and potential future applications of high-field MRI will be discussed in this presentation along with the technical problems which must be overcome in order for the full benefits of ultra high field MRI to be realised.

Professor Richard Bowtell is the Head of the School of Physics and Astronomy at the University of Nottingham. He came to Nottingham in 1984 to study for a Ph.D. under the supervision of Sir Peter Mansfield, the inventor of magnetic resonance imaging. Having been appointed to the academic staff of the then Department of Physics in 1989, he was promoted to Reader in 1995 and to a Chair in Physics in the School of Physics and Astronomy in 2000.

Professor Bowtell's research is carried out at the Sir Peter Mansfield Magnetic Resonance Centre - a research centre that houses three whole-body magnetic resonance imaging systems, including the highest field (seven tesla) system that is used for imaging human subjects in the United Kingdom. His research focuses on developing improved equipment and techniques for

magnetic resonance imaging and applying them in biomedical studies. He has published over 140 scientific papers and lectured at many international meetings, as well as serving on a number of national and international scientific committees.