GENERAL SCIENTIFIC SUMMARY

Measurement of electric fields induced in a human subject due to natural movements in static magnetic fields or exposure to alternating magnetic field gradients

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This work is one aspect of research which has been stimulated by the 2004 European Union directive on exposure to electromagnetic fields, which was due to come in to force during 2008. Although the directive proposed limits on the maximum allowable induced current density due to movement of workers in magnetic fields, there is currently no standard method of recording the current induced in the body directly at low frequencies. This has led to a high reliance on unvalidated, numerical modelling. In this work, the authors have demonstrated, for the first time that specially built dipole probes may be used to measure the electric fields induced on the surface of the body during natural movement in and around an MR scanner magnet. The current density can then be calculated using the known tissue conductivity. The measured fields are shown to be in line with numerical simulations.