

IMPROVED PREDICTION OF THE FIELDS INDUCED IN THE BRAIN DURING TRANSCRANIAL MAGNETIC STIMULATION BY THE INCORPORATION OF MORE REALISTIC HEAD MODELS

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Abstract – This paper presents improved predictions of the field distributions induced inside the brain during Transcranial Magnetic Stimulation (TMS) by incorporating an elaborate and realistic head model in conjunction with the Finite Element Method (FEM). The solid geometry of three major parts of the head, namely skin, skull and inner organs, is constructed from magnetic resonance (MR) image data and the effects of different conductivity values of the brain components on the induced electric field and current distributions are thoroughly investigated. Finally, a new stimulator design, adopting a conductive shield plate between a Figure-Of-Eight (FOE) coil and the head, is simulated in the presence of this improved head model and has shown once more to offer better field localisation than the conventional Figure-of-Eight coils.

Key area: C8

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