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Erratum

Saypol, J.M.; Roth, B.J.; Cohen, L.G.; Hallett, M. A theoretical comparison of electric and magnetic stimulation of the brain. Ann. Biomed. Eng. 19:317–328; 1991.

It is true that during magnetic stimulation the radial component of the electric field induced in a spherical volume conductor vanishes, but the proof given in the appendix on page 328 is flawed. The correct theorem and proof are:

Theorem: *In a spherical volume conductor having a homogeneous, isotropic, Ohmic conductivity, the radial component of the electric field induced during magnetic stimulation is zero.*

Proof: *The electric field obeys Laplace's equation and has zero divergence, therefore r times the radial component of the electric field, r E_r, obeys Laplace's equation within the tissue (1). To ensure continuity of current, E_r must be equal to zero at the conductor-air boundary. However, any function that obeys Laplace's equation within a volume and is zero over the surface bounding that volume must be zero throughout the volume. Therefore r E_r, and thus E_r alone, is zero everywhere within a spherical volume conductor.*

Acknowledgments—We thank Dr. Leon Heller of Los Alamos National Laboratory for pointing out to us that the original proof was incorrect.

REFERENCE

1. Jackson, J.D. Classical electrodynamics. Second edition. New York: John Wiley & Sons; 1975: p. 744.