

## 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.*

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## REFERENCE

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