# Abstracts

## Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Short Papers)

*T.-K. Wu and L.L. Tsai. "Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 61-65.*

The electromagnetic field induced inside arbitrary cross-sectioned cylinders of biological tissue is analyzed by integral equation and moment method techniques. A TM or TE plane wave incidence is assumed, and the cylinders consist of bone or muscle and may be multilayered. The integral equations are of the surface type, and are derived via vector Green's theorem and boundary conditions. Surface and interior fields for both a one-layer and two-layer circular cylinder are found to have excellent agreements with the exact eigenfunction expansion results, thus validating the numerical method. Extensive results are presented for arbitrary cross-section cylinders, with among these an arm model composed of an elliptical outer muscle layer and a circular bone at the center. The field plots throughout the cylinder interior thus obtained should be useful in diagnostics of microwave hazards, particularly in predictions of the so-called "hot spots."

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