

# ELECTROMAGNETIC COUPLING FROM OVERHEAD POWER TRANSMISSION LINES TO AN ELLIPSOIDAL MODEL OF MAN

---

<sup>1</sup>E.N.C. Okafor; <sup>1</sup>C.O. Ahiakwo & <sup>2</sup>F.O. Enemuoh

<sup>1</sup>Department of Electrical/Electronic Engineering, University of Technology Owerri, Nigeria.

<sup>2</sup>Department of Electrical Engineering, Nnamdi Azikiwe University Awka, Nigeria.

## Abstract

Environmental and health implications of electromagnetic fields (EMF's) interaction with life forms in close proximity to extra high voltage AC overhead power transmission lines (OPTL) especially in high density urban areas are fully assessed in view to providing safety guidelines against the effects of these fields. The relative importance of interaction mechanisms involved between the object and the OPTL needed to be properly understood to allay both manifest and potential fear of the public. This is done by obtaining a model to predict the effects of these fields. To this end, theoretical models are developed which satisfy Maxwell's equations and boundary conditions of the dependence of the primary and secondary fields at the point of interaction of the fields with the human body. These are solved analytically using image theory and perturbation theory.

Keywords: Electromagnetic fields, Extra High Voltage, Overhead Power, Transmission Line.

Pages; 89-98

---