Abstracts

Propagation of Transients in Dispersive Dielectric Media

The propagation of transient electromagnetic fields in dispersive dielectric media is studied. The dielectric medium is assumed to be linear, isotropic, and homogeneous and is described by the Debye model. Incident fields are assumed to be TEM plane wave pulses. The dielectric body can assume the form of infinite half space or an infinite circular cylinder, either of which may be homogeneous or stratified. The electric fields induced in the dielectric are calculated from time-domain Maxwell equations using the finite-difference time-domain method, The results of this investigation can be used to study possible biological effects of pulsed electromagnetic fields.

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