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Adonis O Ajayi* (adonisajayi@gmail.com), 150 Kearsney Ct, Village at Blue Hen Apartments, Apartment A6, Dover, DE 19901. *Nonuniform and Adaptive Mesh Refinement Finite-Difference Time-Domain method for Ground Penetrating Radar Simulations.*

We focus on the numerical simulation of electromagnetic wave propagation for Ground penetrating radar (GPR) devices using the Finite-Different Time-Domain (FDTD) method. In many cases, numerical solutions derived from implementation of the standard FDTD method is not without errors of accuracy. For example, the staircasing error is a major problem of the FDTD method. In order to suppress numerical errors and gain greater efficiency, we apply various techniques such as the effective permittivity (subpixel smoothing), the non-uniform mesh and the Adaptive Mesh Refinement (AMR) techniques. (Received September 17, 2013)