

Finite-Difference Time-Domain (FDTD) modeling of metamaterial structures

Costas Sarris, University of Toronto

I will provide an overview of Finite-Difference Time-Domain (FDTD) based models of various metamaterial structures. Emphasis will be given on transmission-line metamaterials, in "perfect lens" and leaky-wave antenna applications, efficiently modeled by invoking periodic boundary conditions. FDTD models of plasmonic metamaterials and plasmonic super-directive antennas will also be discussed, along with the challenges presented in such cases. The ability of these time-domain models to illuminate the underlying physics of such structures and the unconventional wave effects they support will be illustrated.