Abstracts

Efficient body of revolution finite-difference time-domain modeling of integrated lens antennas

An efficient body of revolution finite-difference time-domain (BOR-FDTD) method for the analysis of the radiation properties of integrated lens antennas is presented in this paper. By neglecting most of the reactive power of the planar feed and by expanding the filtered source currents into azimuthal modes, lenses with both rotationally and nonrotationally symmetric planar feeds can be handled. It appears that three to four azimuthal modes are sufficient to adequately model the magnetic currents of a double-slot feed. Therefore, compared to a full three-dimensional (3-D) numerical method, the implementation of the proposed method is very time and memory efficient. If only the radiation properties are required, the model described here can also be applied efficiently to other axially symmetric geometries with an asymmetric feeding structure.

❑ Return to main document.