Conformal Meshing in FFT Based EM Analysis

J. C. Rautio
Sonnet Software, Inc., USA

Shielded planar EM analysis is based on the FFT. This means it has extremely high accuracy and dynamic range (due to the complete absence of numerical integration), but it also analyzes a circuit based on a fine underlying FFT mesh. While the FFT mesh can be even finer than the pixels on a typical computer screen, it does result in more difficulty in analyzing non-Manhattan geometries. Conformal mesh eliminates this problem for a broad class of non-Manhattan geometries including curved transmission lines, like circular spiral inductors. The nature of this conformal meshing is described and examples are given. Complicated circuits with curving transmission lines can now be analyzed quickly even if they can not be analyzed at all (to the same degree of error) on any other EM tool of any kind.