METHODS AND APPARATUS FOR CALCULATING ELECTROMAGNETIC SCATTERING PROPERTIES OF A STRUCTURE AND FOR RECONSTRUCTION OF APPROXIMATE STRUCTURES

ABSTRACT

A CSI algorithm for reconstructing grating profiles is disclosed. Solving a volume integral equation for current density, **J**, employs the implicit construction of vector field, $\mathbf{F}^S$ related to the electric field, $\mathbf{E}^S$, and current density, **J**, by selection of continuous components of **E** and **J**, **F** being continuous at one or more material boundaries, so as to determine an approximate solution of **J**. **F** is represented by at least one finite Fourier series with respect to at least one direction, *x*, *y*, and the step of numerically solving the volume integral equation comprises determining a component of **J**, by convolution of **F**, with a convolution operator, M comprising material and geometric structure properties in both directions. **J** may be represented by at least one finite Fourier series with respect to both directions. The continuous components can be extracted using convolution operators, P_T and P_N, acting on **E** and **J**.

(Figure 7)