Abstracts

An Integrated System for the Synthesis of Coated Waveguides from Specified Attenuation

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The problem of describing the thickness and material properties of inner coatings of waveguides so as to produce a specified rate of attenuation is an increasingly important one however, the technology for solving such problems is not yet suitable for routine use because (i) the solution procedure requires the solution of two finite element eigenvalue problems to compute the gradient of the object function with respect to every parameter of description and as a result, convergence to the optimum is very slow, and (ii) there is no integrated system for the implementation of these methods that would allow easy use. This paper presents the modules for an integrated synthesis system that incorporates (i) a new, algorithm for the quick computation of the gradients of the object function, and (ii) integrates drafting and word-processing packages into the finite element field computations so as to allow easy implementation of the synthesis algorithms and their comfortable incorporation into an engineer's other duties, such as writing reports and proposals.

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