Abstracts

Cascaded Network Optimization Program

J.W. Bandler, J.R. Popovic and V.K. Jha. "Cascaded Network Optimization Program." 1974 Transactions on Microwave Theory and Techniques 22.3 (Mar. 1974 [T-MTT] (Special Issue on Computer-Oriented Microwave Practices)): 300-308.

A user-oriented computer program package is presented that will analyze and optimize certain cascaded linear time-invariant electrical networks such as microwave filters and all-pass networks. The program is organized in such a way that future additions or deletions of performance specifications, constraints, optimization methods, and circuit elements are readily implemented. Presently, a variety of two-port lumped and distributed elements, all-pass C-type sections and all-pass D-type sections can be treated as fixed or variable between upper and lower bounds on the parameters. Adjoint network sensitivity formulas are incorporated. The Fletcher-Powell or Fletcher optimization methods can be called to optimize in the least pth sense of Bandler and Charalambous an objective function incorporating simultaneously, at the user's discretion, input reflection coefficient, insertion loss, group delay, and the parameter constraints (if any). The program is particularly flexible in the way in which response specifications are handled at any number of, in general, overlapping frequency bands. The package, which is written in Fortran IV, has been tested on a CDC 6400 digital computer.

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