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Waveguide Filter Modeling and Simulation using Mode-matching, FullwaveNetwork Analysis and Swarm Optimization

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Abstract: This paper presents the modeling ofwaveguide bandpass filter synthesis. It consists of acombination of the most appropriate and reliablemethods and techniques of analysis, simulation andoptimization used in determined order and leading to afast and accurate method of filter synthesis. An exampleof a forth-order filter synthesis is given, employing asymmetric configuration and symmetric response. Theobtained results, reference measurement and commercialsoftware simulator results are compared for validation.

Keywords : filter, waveguide, Coupling matrix, Mode-matching, Segmentation method, Optimization techniques.