

## A neural network model for CAD and optimization of microwave filters

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Improvement of the performance/cost ratio for modern microwave filters requires manufacturing-oriented design, hence accommodating full-wave tolerance analyses and yield optimization which are very computer-insensitive. The use of neural networks for reducing the design effort of microwave filters, although still in its infancy, seems to provide a rather promising option. Once properly selected and trained, neural networks can approximate the filter response at a very modest fraction of the computer resources used by the full-wave rigorous model, hence enabling systematic application of manufacturing-oriented design. In this paper we present the solution of the major important choices related to the effective selection of a neural network suitable for approximating the behavior of a typical microwave filter. For illustration we consider the example of a standard four-pole E-plane metal-insert filter operating in X-band.

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