The effect of variations of dimensions of a coaxial to WG1800 waveguide coupler on its frequency

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Abstract

The fabrication tolerances for a coaxial to WG1800 waveguide coupler cause the variations of its electromagnetic parameter such as the working frequency. In order to investigate the effect of these uncertainty on the electromagnetic parameters, Monte Carlo method is usually used, which is very time consuming. In this paper, the generalized Polynomial Chaos (gPC) method is first used for study the effect of variations of dimensions of a WR187 rectangular cavity on the resonant frequency. To assessment the accuracy of this method, these results are compared with the Monte Carlo and the theory methods. In the second step, the effect of variations of dimensions of a coaxial to WG1800 waveguide coupler on its frequency is investigated using the gPC Method.
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Keywords: Fabrication tolerances, Variations, Monte Carlo, generalized Polynomial Chaos, frequency

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