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Effects of Random Geometrical Perturbations in Slow Wave Devices¹ P. PENGVANICH, University of Michigan, Ann Arbor, MI, D. CHERNIN, Science Applications International Corp., McLean, VA, Y.Y. LAU, R.M. GILGENBACH, University of Michigan, Ann Arbor, MI, D. DIALETIS, Science Applications International Corp., McLean, VA — Motivated by the current interest in THz source, where miniature circuits are usually required, we evaluate the effects of geometrical random errors introduced during the manufacturing processes on the circuit characteristics. One such study was given in a previous paper [1], where a pi-section lumped element was used to model a periodic slow wave structure. In this paper, we extend the formulation of Ref. [1] to other geometries, such as the Smith-Purcell radiator or the traveling wave tube. The effects of the random manufacturing errors on the gain and efficiency in the electron-circuit interaction will be addressed.

[1] D. Dialetis and D. Chernin, "Effect of Random Manufacturing Errors on Slow Wave Circuit Performance," 1997, IEEE Conference Record.

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