Abstracts

An Estimate of the Interaction Impedance of a Vane-Loaded Helix Using Equivalent-Circuit Analysis (Short Papers)

V.P. Singh, B.N. Basu and R.K. Jha. "An Estimate of the Interaction Impedance of a Vane-Loaded Helix Using Equivalent-Circuit Analysis (Short Papers)." 1986 Transactions on Microwave Theory and Techniques 34.1 (Jan. 1986 [T-MTT]): 182-183.

The expression for the interaction impedance of a broad-band vane-loaded helical slow-wave structure has been found using Pierce's simple theory for a helix in free space, and the results of the equivalent-circuit analysis of the loaded structure. The interaction impedance has been found to be of the order of half the characteristic impedance in a typical loaded structure. The dependence of the small-signal gain on the thickness of the helix wire, the size of the vanes, and the location of the metal envelope has been predicted.

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