

Design and analysis of backward wave folded waveguide travelling wave tube

Abstract

At the present time there is no simple analytical model for the design of the folded waveguide travelling wave tube (FWTWT). Numerical software does exist for the design of FWTWT but requires large computer run time, costly and does not provide the physical view for rapid design optimization of the FWTWT. In this paper, the design and analysis of the backward wave FWTWT are presented, by using the spatial harmonics method of the TE_{10} mode of the EM wave. The normalised dispersion and beam line equations are used to simplify the design process, so that FWTWT can be designed to operate at any desired frequency.