

Abstract Submitted
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Determine the Dispersion Relation of an A6 Magnetron Using Conformal Finite Difference Time Domain Method¹ M.C. LIN, C. NIETER, P.H. STOLTZ, D.N. SMITHE, TECH-X CORPORATION TEAM — This work introduces a conformal finite difference time domain (CFDTD) method to accurately determine the dispersion relation of an A6 relativistic magnetron. The accuracy is measured by comparing with accurate SUPERFISH calculations based on finite element method. The results show that an accuracy of 99.4% can be achieved by using only 10,000 mesh points with Dey-Mittra algorithm. By comparison, a mesh number of 360,000 is needed to preserve 99% accuracy using conventional FDTD method. This suggests one can efficiently and accurately study the hot tests of microwave tubes using CFDTD particle-in-cell method instead of conventional FDTD one.

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