TE/TM Pass Guided Wave Optical Polarizer

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Abstract: A metal-clad guided wave optical polarizer with a high-index dielectric buffer layer is analyzed. The TE and TM polarization characteristics of the infinitely long version of the polarizer are well-known and are easily obtainable by solving the Helmholtz equation. The *infinitely* long polarizer model does not account for the input/output ends of the polarizer and thus it is not practical. In this work, we analyze the *finite*-length version of the same polarizer using the Method of Lines. In this manner, we account simultaneously for the absorption loss due to the presence of the metal and the loss due to reflection at the input and output ends of the finite-length polarizer. The effect of the polarizer length and thickness of the high index buffer layer on the TE/TM discrimination properties of the polarizer are calculated by the MOL.