

Beam Propagation in Optical Waveguides: 2D Bi-Directional Nonparaxial

BPM2D-BiDi Module

Design and Simulation of Optical Waveguides with 2D Bi-Directional, Nonparaxial Beam Propagation Method

Module Overview

This module simulates the wave propagation through multiple reflecting interfaces in 2D Optical Waveguides using a Bi-Directional Beam Propagation Method based on finite difference split-step, nonparaxial scheme. The method is non-iterative, highly efficient, simulates non-paraxial propagation very accurately and matches RCWA and available experimental results very well. The method can simulate multiple reflecting interfaces in forward and backward directions without any special modifications and with much less computational effort than other Bi-BPM and FDTD methods. Simulation examples have been presented for Facet with High Reflection Multilayer Coatings and Tilted Bragg Gratings (TBGs) in 2D Optical Waveguides. The customized applications for other multiple reflecting interfaces are available on user's request.

Module Features

Nonparaxial
Bi-Directional
2 Dimensional
Finite Difference Split-Step Method

Module Applications

2D Waveguide with Arbitrary Multiple Reflecting Interfaces
2D Waveguide Facet with High Reflection Multilayer Coatings
2D Waveguide Bragg Gratings (Tilted / Untilted)
Finite Beams in Volume Bragg Gratings
Customized Applications are Available on User's Request

Module Type

Software Module with Matlab (.m files)

Module Users

OEMs and Other Photonics Software Companies can Implement this Module into their Software and Hardware Products

Government lab researchers

Company researchers

University Researchers