Analysis Of Multi-Layer ARROW

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Summary

A multi-layer Anti-Resonant Reflecting Optical Waveguide (ARROW) is used in order to enhance the evanescent field in low-index media. Polarization properties and the spectral response showing the variation of the real and imaginary parts of the modal effective index as a function of wavelength for various values of core thickness is studied. The fraction of the modal power in the superstrate region is calculated for various values of wavelength. Also the sensitivity of the multi-layer structure (i.e., the variation of the modal loss and phase difference of the fundamental TE as a function of superstrate bulk loss and superstrate refractive index) is calculated. The Method of Lines (MoL)is used in the analysis of the problem with higher order approximation and a Perfectly Matched Layer (PML) based on transformation of space into the complex domain is used in order to absorb the radiative field.