عنوان مقاله:

A Comparative Study of Multipole and Empirical Relations Methods for Effective Index and Dispersion Calculations of Silica-Based Photonic Crystal Fibers

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خلاصه مقاله:

In this paper, we present a solid-core Silica-based photonic crystal fiber (PCF) composed of hexagonal lattice of air-holes and calculate the effective index and chromatic dispersion of PCF for different physical parameters using the empirical relations method (ERM). These results are compared with the data obtained from the conventional multipole method (MPM). Our simulation results reveal that the ERM is an accurate and fast method for dispersion analysis of PCFs with large pitch sizes. However, for small pitch sizes of PCFs, it is not as accurate as the MPM method. Therefore, ERM is a fast, simple and accurate method for modelling and analysis of Silica-based PCFs with large pitch sizes.

کلمات کلیدی:

Dispersion, empirical relations method, multipole method, photonic crystal fiber, Silica

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