Abstracts of MMA2009, May 27 - 30, 2009, Daugavpils, Latvia © 2009

## NUMERICAL ANALYSIS OF MICROSTRUCTURED OPTICAL FIBERS BY THE R-FUNCTIONS METHOD

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Microstructured optical fibers (MOFs) also called a photonic crystal fibers or holey fibers are single material optical fibers with a periodic array of air holes running along their entire length [1]. MOFs have recently generated much interest thanks to the new ways provided to control and guide light. There are many research efforts have been devoted to understanding the propagation characteristics of MOFs based on different numerical methods.

This paper devoted to numerical analysis of wave propagation in holey fibers by the R-functions method (RFM) [2]. The basic feature of the RFM is construction of normalized boundary domain equations for geometric objects of complicated forms [3].

Mathematical model of the investigated processes is boundary value problem for Helmholtz equation. According to the RFM the solution of the problem constructed in analytical form by the sheaf of functions called general structure of solutions (GSS), satisfying exactly the prescribed boundary conditions. Numerical realization of elaborated method and analysis of obtained results were conducted.

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