Ray trace algorithm description for the study of pump power absorption in double clad fibers (Conference Paper)

Narro, R. , Rodriguez, E., Ponce, L., De Posada, E., Flores, T., Arronte, M.

Laboratorio de Tecnología Láser, CICATA-IPN, Unidad Altamira, km 14.5 Carr. Tampico-Puerto Ind. Altamira, Altamira 89600, Tamps, Mexico

Abstract

An algorithm for the analysis of the double clad fiber design is presented. The algorithm developed in the MATLAB computing language, is based on ray tracing method applied to three-dimensional graphics figures which are composed of a set of plans. The algorithm can evaluate thousands of ray paths in sequence and its corresponding pump absorption in each of the elements of the fiber according to the Lambert-Beer law. The beam path is evaluated in 3 dimensions considering the losses by reflexion and refraction in the faces and within the fiber. Due to its flexibility, the algorithm can be used to study the ray propagation in single mode or multimode fibers, bending effects in fibers, variable geometries of the inner clad and the core, and could also be used to study tappers. © 2011 Copyright Society of Photo-Optical Instrumentation Engineers (SPIE).

Proceedings of SPIE - The International Society for Optical Engineering