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On some direct and inverse problems concerning guided modes in optical fibers

Abstract

This paper consists of summarizing the various scientific works of the esteemed team composed of Prof. *Abdelaziz Choutri*, Dr. *Abdelwahab Boureghda* and Dr. *Hayat Rezgui* (from Ecole Normale Supérieure de Kouba, Algiers, Algeria), during a decade of a condensed and continuous work. These various works were subjects of scientific articles published in prestigious journals, or were presented in oral communications/symposia in several international or North African conferences. All these works were carried out at the Laboratory of nonlinear partial differential equations (EDPNL Laboratory) and Department of Mathematics in Ecole Normale Supérieure de Kouba, Algiers, Algeria. This team has done great job which has earned the recognition of many experts in the different fields in which this team specializes.

Keywords: Optical fibers, waveguides, inverse problems, directional couplers, guided modes, refractive index, error Truncation

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Hayat Rezgui
EDPNL Laboratory, Department of Mathematics, Ecole Normale Supérieure de Kouba, Algeria

Correspondence: Hayat Rezgui, EDPNL Laboratory, Department of Mathematics, Ecole Normale Supérieure de Kouba, Algiers, Algeria,
Email rezguihayat@yahoo.fr, hayat.rezgui@g.ens-kouba.dz

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Introduction

In the last ten years, the team whose members are the three estimated authors: Professor *Abdelaziz Choutri*, Dr. *Abdelwahab Boureghda* and Dr. *Hayat Rezgui* have been able to enrich the existing literature with many very important scientific works (articles, conference papers, presentations, videos, ...) in the fields of optical fibers, waveguides, inverse problems, direct problems, ... etc. We cite, as examples, the manuscripts[1-10] in which many current issues have been addressed and resolved with graphic and numerical illustrations, the conference papers[11-13] and the video presentations.[14,15]

It should be noted that the reference[7] has been read 5300 times on the site: **https://www.researchgate.net/**, which surpasses the readability of 99% of the articles published on the same site since the year 2022.

The most famous papers of this team were published in prestigious journals, as: Optical and Quantum Electronics, Mediterranean Journal of Mathematics, Palestine Journal of Mathematics, Physics & Astronomy International Journal, Global Journal of Science Frontier Research and others... The three authors also contributed in the same fields indicated above by works in Arabic language[8] and in other fields as: Number theory, computer science, numerical analysis, nonlinear subdivision schemes, image processing, ...

It should also be noted that Dr. *Hayat Rezgui* has published books and e-books that have been translated into several languages.

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Conflicts of interest

The author declares there is no conflict of interest.

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