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Numerical investigation of composite materials and structures

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The main goal of the development described in this work is to provide a numerical tool that could be used to obtain approximate solutions for composite skew plate bending. This research deals with bending problems under different loading and various support conditions. At first, it is of pivotal importance to note that despite the spread use of composite skew plates, the published literature shows an important lack of scientific works regarding these particular structures. For a better understanding of composite skew plate behavior, the present investigation was based on a simplified theoretical model, known as Kirchhoff-love model, established for thin plate analysis. The proposed numerical method uses an efficient finite difference scheme that exhibits controllable accuracy for approximations and shows excellent flexibility in handling complex geometry and boundary conditions. Particular examples of simply supported composite skew plates are discussed. Different examples involving a variety of boundary conditions are also analyzed in this paper. Highly consistent numerical solutions are obtained for skew composite plates with various skew angles. Numerical results given by our model are checked against the only existing solutions.

Biography

Lmokhtar Ikharrazne is currently the Professor teaching in Civil and Environmental Engineering at National School of Applied Sciences, Al-Hoceima (ENSAH) which is affiliated with the Mohammed First University of Oujda. He has Doctorate degree in Structural Mechanics, conferred by Hassan II University of Casablanca. He is a Leader and Educational Coordinator of teaching program of Civil Engineering. He has total of 20 years experience in research and education in structural and civil engineering, applied mechanical engineering and taught structural engineering undergraduate and post-graduate courses both in the Hassan II University of Casablanca and Mohammed First University of Oujda.

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