AHI EVRAN

3rd International Conference on on Scientific Research

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ABSTRACT BOOK

Editors
Assist. Prof. Dr. Mevlüde Alev ATEŞ
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ISBN - 978-625-367-076-4

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Institute Of Economic Development And Social Researches Publications®
(The Licence Number of Publicator: 2014/31220)
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www.iksad.org www.iksadkongre.org

Issued: 15.05.2023

ISBN - 978-625-367-076-4

CONTENT

NUMERICAL SIMULATION OF VIBRATION FTEQUENCIES FOR THIN ELASTIC CIRCLE PLATE

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ABSTRACT

The problems of vibrations of critical structural elements have been the focus of attention of many researchers and engineers over the past decades [1,2]. Each new design requires additional research. New modern materials are being developed, special devices for vibration damping are being introduced [3-5]. At the same time, new efficient numerical methods are being developed [6,7].

Thin round elastic plates are often used as critical elements of complex engineering structures. Suppose, deformation of the plate is described by function w. Natural modes w_l and their corresponding natural frequencies $\boldsymbol{\Omega}_l$ are determined by solving such a spectral problem

$$D\Delta\Delta w_k + (K - \rho_p h\Omega_k^2)w_k = 0, \quad (1)$$

$$w|_{r=R} = 0, \quad \left.\frac{dw}{dr}\right|_{r=R} = 0. \quad (2)$$

Keywords: vibrations, circle plate, numerical methods for evaluation of roots