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Zenkour, A.M.^{a b}, Sobhy, M.^b

Thermal buckling of functionally graded plates resting on elastic foundations using the trigonometric theory
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^a Department of Mathematics, Faculty of Science, King AbdulAziz University, P. O. Box 80203, Jeddah 21589, Saudi Arabia

^b Department of Mathematics, Faculty of Science, Kafrelsheik University, Kafr El-Sheikh, Egypt

Abstract

In this article, thermal buckling analysis of functionally graded material (FGM) plates resting on two-parameter Pasternak's foundations is investigated. Equilibrium and stability equations of FGM plates are derived based on the trigonometric shear deformation plate theory and includes the plate foundation interaction and thermal effects. The material properties vary according to a power law form through the thickness coordinate. The governing equations are solved analytically for a plate with simply supported boundary conditions and subjected to uniform temperature rise and gradient through the thickness. Resulting equations are employed to obtain the closed-form solution for the critical buckling load for each loading case. The influences of the plate aspect ratio, side-to-thickness ratio, gradient index, and elastic foundation stiffnesses on the buckling temperature difference are discussed. Copyright © Taylor & Francis Group, LLC.

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