

Accepted Manuscript

Free vibration analysis of coupled functionally graded (FG) doubly-curved revolution shell structures with general boundary conditions

Kwangnam Choe, Jinyuan Tang, Cijun shui, Ailun Wang, Qingshan Wang

PII: S0263-8223(18)30723-2

DOI: <https://doi.org/10.1016/j.compstruct.2018.04.035>

Reference: COST 9589

To appear in: *Composite Structures*

Received Date: 20 February 2018

Revised Date: 28 March 2018

Accepted Date: 6 April 2018



Please cite this article as: Choe, K., Tang, J., shui, C., Wang, A., Wang, Q., Free vibration analysis of coupled functionally graded (FG) doubly-curved revolution shell structures with general boundary conditions, *Composite Structures* (2018), doi: <https://doi.org/10.1016/j.compstruct.2018.04.035>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Free vibration analysis of coupled functionally graded (FG) doubly-curved revolution shell structures with general boundary conditions

Kwangnam Choe¹, Jinyuan Tang², Cijun shui², Ailun Wang², Qingshan Wang^{2*}

¹Department of Light Industry Machinery Engineering, Pyongyang University of Mechanical Engineering, Pyongyang, 999093, Democratic People's Republic of Korea

²State Key Laboratory of High Performance Complex Manufacturing, Central South University, Changsha 410083, PR China

ABSTRACT:

In this paper, free vibration behavior of coupled functionally graded (FG) doubly-curved revolution shell structures with general boundary conditions is studied by the using unified Jacobi-Ritz Method. The first-order shear deformation theory in conjunction with a multilevel partition technique is adopted to establish the theoretical model. The substructure of the theoretical model mainly includes the FG elliptical, hyperbolic, paraboloidal and cylindrical shells and three kinds of coupled FG shell structures containing paraboloidal-cylindrical shells, elliptical-cylindrical shells and hyperbolic-cylindrical shells are also considered in actual calculation. To obtain the continuous conditions at the interface and satisfy the arbitrary boundary conditions, the boundary and coupling spring techniques are adopted in this paper. In despite of the shell components and the boundary conditions, a mix function which is with the Jacobi polynomials along the meridional direction and the standard Fourier series along the circumferential direction is used as the admissible displacements of each shell segment. The convergence and comparison studies for the FG doubly-curved revolution shell structures with different boundary conditions, coupling parameters and Jacobi parameters are carried out to verify the reliability and accuracy of the present

* Corresponding Author: Telephone: +86-451-82519797; Email: wangqingshanxlz@hotmail.com

Download English Version:

<https://daneshyari.com/en/article/6703587>

Download Persian Version:

<https://daneshyari.com/article/6703587>

[Daneshyari.com](https://daneshyari.com)