

Asymptotic analysis of thin walled transversely inhomogeneous structures

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3D equations of motions in linear elasticity for transversely inhomogeneous plates and cylindrical shells are considered over a low frequency domain [1, 2]. Asymptotically consistent 2D and 3D shortened equations are derived. For the first time, the coefficients in this equation are found in an explicit form expressed through repeated integrals across the thickness. Numerical examples are presented. It is noted that comparisons with previous *ad-hoc* engineering developments on the subject are hardly meaningful, particularly for higher-order approximations.

1. Kaplunov J., Erbaş B., and Ege N. 2022. *Asymptotic Derivation of 2D Dynamic Equations of Motion for Transversely Inhomogeneous Elastic Plates*. International Journal of Engineering Science 178 (103723): 103723.
2. Ege, N., Erbaş B., Kaplunov J., and Noori N. 2022. *Low-Frequency Vibrations of a Thin-Walled Functionally Graded Cylinder (plane Strain Problem)*. Mechanics of Advanced Materials and Structures. Doi:10.1080/15376494.2022.2028948.
