

Article Abstract

Title:	Three-dimensional dispersion analysis of homogeneous transversely isotropic thermo elastic solid bar of polygonal cross-sections immersed in fluid
Author(s):	P. Ponnusamy
Address(es):	Department of Mathematics, Govt. Arts College (Autonomous), Coimbatore - 641 018, Tamil Nadu, INDIA E-mail: ponnusamypp@yahoo.com (P. Ponnusamy), Mobile: +91 979153 2046
Journal:	<i>International Journal of Engineering, Science and Technology</i> , Vol. 3, No. 9, 2011, pp. 16-36.
Abstract:	The problem of wave propagation in an infinite, homogeneous, transversely isotropic thermo elastic polygonal cross-sectional bar immersed in fluid is studied using Fourier expansion collocation method, with in the framework of linearized, three dimensional theory of thermoelasticity. Three displacement potential functions are introduced, to uncouple the equations of motion and the heat conduction. The frequency equations are obtained for longitudinal and flexural (symmetric and antisymmetric) modes of vibration and are studied numerically for triangular, square, pentagonal and hexagonal cross-sectional Zinc bar. The computed non-dimensional wave numbers are presented in the form of dispersion curves.
Keywords:	vibration of cylinder, thermal cylinder immersed in fluid, fluid loaded cylinder, solid- fluid interaction, transversely isotropic cylinder, rod immersed in fluid.