Vibration response of double-walled carbon nanotubes embedded in an   elastic medium with inter-tube Vander waals forces

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Abstract : The study of vibration in carbon nanotubes(CNTs) is currently a major topic of interest that increases understanding of their dynamic mechanical behavior. In this work differential transform method(DTM) is used to study the vibrational behavior of the double walled carbon nanotubes(DWCNT) for various boundary conditions. Elastic continuum models are used to study the vibrational behavior of CNTs to avoid the difficulties encountered during experimental characterization of nanotubes as well as the time-consuming nature of computational atomistic simulations. To calculate the resonant vibration of double-walled carbon nanotubes embedded in an elastic medium, a theoretical analysis is presented based on Euler-Bernoulli beam model and Winkler spring model.

Keywords : *Aerospace , Buvnov-Galerkin, DTM, DWCNT, MATLAB, Petrov-Galerkin*.

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