

Critical Buckling Load of Carbon Nanotube with Non-Local Timoshenko Beam Using the Differential Transform Method

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Abstract : In this paper, the Differential Transform Method (DTM) is employed to predict and to analysis the non-local critical buckling loads of carbon nanotubes with various end conditions and the non-local Timoshenko beam described by single differential equation. The equation differential of buckling of the nanobeams is derived via a non-local theory and the solution for non-local critical buckling loads is finding by the DTM. The DTM is introduced briefly. It can easily be applied to linear or nonlinear problems and it reduces the size of computational work. Influence of boundary conditions, the chirality of carbon nanotube and aspect ratio on non-local critical buckling loads are studied and discussed. Effects of nonlocal parameter, ratios L/d , the chirality of single-walled carbon nanotube, as well as the boundary conditions on buckling of CNT are investigated.

Keywords : boundary conditions, buckling, non-local, differential transform method

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