Phung-Van, P.; **Nguyen-Thoi, T.**; **Luong-Van, H.**; **Thai-Hoang, C.**; **Nguyen-Xuan, H.**

A cell-based smoothed discrete shear gap method (CS-FEM-DSG3) using layerwise deformation theory for dynamic response of composite plates resting on viscoelastic foundation.

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Summary: A cell-based smoothed discrete shear gap method (CS-FEM-DSG3) based on the first-order shear deformation theory (FSDT) was recently proposed for static and dynamics analyses of Mindlin plates. In this paper, the CS-FEM-DSG3 is extended to the layerwise deformation theory for dynamic response of sandwich and laminated composite plates resting on viscoelastic foundation subjected to a moving mass. The plate-foundation system is modeled as a discretization of triangular plate elements supported by discrete springs and dashpots at the nodal points representing the viscoelastic foundation. The position of the moving mass with specified velocity on triangular elements at any time is defined, and then the moving mass is transformed into loads at nodes of elements. The accuracy and reliability of the proposed method is verified by comparing its numerical solutions with those of others available numerical results.

MSC:

74S05 Finite element methods applied to problems in solid mechanics
74A50 Structured surfaces and interfaces, coexistent phases
74K20 Plates

Keywords:

smoothed finite element methods (S-FEM); cell-based smoothed discrete shear gap method (CS-FEM-DSG3); layerwise deformation theory; sandwich/composite plate; viscoelastic foundation; moving mass

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