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Buckling and postbuckling of biaxially compressed functionally graded multilayer graphene nanoplatelet-reinforced polymer composite plates

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Highlights

- Buckling and postbuckling of biaxially compressed functionally graded multilayer GPLRC plates are investigated.
- The material properties of the GPL-reinforced composite (GPLRC) are evaluated through a micromechanics model.
- Theoretical formulations based on the first-order shear deformation plate theory and von Kármán-type nonlinear kinematics are developed.
- A two step perturbation technique is employed to determine the asymptotic postbuckling solutions of both perfect and imperfect plates.
- The effects of GPL weight fraction, distribution pattern, geometry on buckling and postbuckling behaviors of GPLRC plates are examined.

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