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Analytical solution for buckling of orthotropic double-layered graphene sheets exposed to unidirectional in-plane magnetic field with various boundary conditions

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1	Analytical solution for buckling of orthotropic double-layered
2	graphene sheets exposed to unidirectional in-plane magnetic field
3	with various boundary conditions
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8	Abstract:
9	In this article, the analyses of the buckling behaviour of orthotropic double-layered graphene
10	sheets (DLGSs), resting on Pasternak's elastic foundation with various boundary conditions and
11	subjected to unidirectional in-plane magnetic field are presented. The governing equations of
12	equilibrium of the nonlocal model are derived in terms of generalized displacement using the
13	new first-order shear deformation theory (NFSDT) and Maxwell's equations in conjunction with
14	the Eringen's differential nonlocal elastic law. An explicit solution for buckling loads is obtained
15	for orthotropic DLGSs under biaxial and uniaxial loads. The effectiveness of the present
16	formulation and solutions are firstly validated by executing the comparison studies with results
17	available in the literature. The effects of nonlocal parameter, magnetic field strength, a different
18	type of load and boundary conditions, aspect ratio, side length and number of half waves on the
19	buckling behaviour of DLGSs are investigated.
20	Keywords: A. Nano-structures, B. Buckling C. Analytical modelling, Magnetic field
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