

Closed-Form Solutions for Nanobeams Based on the Nonlocal Euler-Bernoulli Theory

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Abstract : Starting from nonlocal continuum mechanics, a thermodynamically new nonlocal model of Euler-Bernoulli nanobeams is provided. The nonlocal variational formulation is consistently provided and the governing differential equation for transverse displacement are presented. Higher-order boundary conditions are then consistently derived. An example is contributed in order to show the effectiveness of the proposed model.

Keywords : Bernoulli-Euler beams, nanobeams, nonlocal elasticity, closed-form solutions

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