

## Gradient and fractional elasticity models in statics and dynamics

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*Abstract:* Nonlocal gradient elasticity has been shown to eliminate elastic singularities and interpret size effects in classical static problems. In dynamics the situation is more complex and a current assessment is provided. A key issue is the need of both internal lengths and internal times to be introduced. Some examples on vibrations are presented. Fractional counterparts of these models are also discussed. References: [1] E.C. Aifantis, Internal length gradient (ILG) material mechanics across scales & disciplines, *Adv. Appl. Mech.* 49, pp. 1-110, 2016.

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