Advances in Extended and Multifield Theories for Continua [

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Monografía

Modern computational techniques, such as the Finite Element Method, have, since their development several decades ago, successfully exploited continuum theories for numerous applications in science and technology. Although standard continuum methods based upon the Cauchy-Boltzmann continuum are still of great importance and are widely used, it increasingly appears that material properties stemming from microstructural phenomena have to be considered. This is particularly true for inhomogeneous load and deformation states, where lower-scale size effects begin to affect the macroscopic material response; something standard continuum theories fail to account for. Following this idea, it is evident that standard continuum mechanics has to be augmented to capture lower-scale structural and compositional phenomena, and to make this information accessible to macroscopic numerical simulations

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