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**Mechanics of the inelastic behavior of materials. I: Theoretical underpinnings.** (English)

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Summary: This is the first of a two-part paper [for part II see the next entry] that is concerned with the modeling of behavior of inelastic materials from a continuum viewpoint, taking into account changes in elastic response and material symmetry that occur due to changes in the microstructure of material. The first part discusses some of the fundamental issues that must be addressed when modeling the elastic response of these materials. In particular, we discuss in detail the far reaching effects of the notion of materials with families of elastic response functions with corresponding natural configurations. For these materials, we give a definition of material symmetry that makes it possible to discuss the concept of “evolving material symmetry”.

**MSC:**

74C99 Plastic materials, materials of stress-rate and internal-variable type

74A20 Theory of constitutive functions in solid mechanics

Cited in **56** Documents

**Keywords:**

evolving material symmetry; microstructure; families of elastic response functions; natural configurations

**Full Text:** [DOI](#)