Irreducible Basis Tensors and Constitutive Equation of Textured Elastic Polycrystals

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Abstract

A set of tensors is said to constitute an irreducible tensor basis if they form the basis for an irreducible representation of the rotation group. Members of irreducible tensor bases are called irreducible basis tensors. In this talk we present, in the space of elasticity tensors, a special set of irreducible basis tensors, with which we obtain a simple explicit formula for the Voigt-Reuss-Hill average for elastic polycrystals with arbitrary crystal and texture symmetries. The formula presented is accurate to first order in the texture coefficients. This talk reports joint work with Mojia Huang (Nanchang University, China).

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