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**Numerical simulation on elastic properties of
short-fiber-reinforced metal matrix composites: Effect of fiber
orientation**

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Abstract

To investigate the effect of fiber orientation on the effective elastic properties of short-fiber-reinforced metal matrix composites, the two-step mean-field homogenization procedures including the D-I/Reuss, M-T/Reuss, D-I/Reuss, M-T/Voigt and D-M/V-R models are introduced and the corresponding numerical implementations are detailed. Compared with the RVE based FE homogenization method, the two-step mean-field homogenization procedures: D-I/Reuss, M-T/Reuss, D-I/Reuss, M-T/Voigt and D-M/V-R models to predict the effective elastic properties of short-fiber-reinforced metal matrix composites are validated. The simulation results show that the axial effective elastic moduli E_{22} and E_{33} of short-fiber-reinforced metal matrix composites with the aligned fibers reach

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