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Sommario/riassunto	Engineering materials show a pronounced heterogeneity on a smaller scale that influences the macroscopic constitutive behavior. Algorithms for the periodic discretization of microstructures are presented. These are used within the Nonuniform Transformation Field Analysis (NTFA) which is an order reduction based nonlinear homogenization method with micro-mechanical background. Theoretical and numerical aspects of the method are discussed and its computational efficiency is validated.