



**Introduction to Practical  
Peridynamics: Computational Solid Mechanics  
Without Stress and Strain (Frontier Research in  
Computation and Mechanics of Materials and  
Biology)**

*Walter Herbert Gerstle*

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# Introduction to Practical Peridynamics:Computational Solid Mechanics Without Stress and Strain (Frontier Research in Computation and Mechanics of Materials and Biology)

*Walter Herbert Gerstle*

**Introduction to Practical Peridynamics:Computational Solid Mechanics Without Stress and Strain (Frontier Research in Computation and Mechanics of Materials and Biology)** Walter Herbert Gerstle

Parting with the classical continuum concepts of stress and strain in the computational simulation of solids, this book proposes a peridynamic model that applies the model directly to particle lattices. The model is directly solvable on a computer.

*Introduction to Practical Peridynamics* is both a graduate-level textbook and a treatise. The text provides the necessary foundations to understand and apply the state-based peridynamic lattice model, as well as a guide for the practical use of the model — for solving realistic structural engineering problems (particularly in reinforced concrete structures) in elasticity, plasticity, damage, fracture, and large deformations.

Contents in this book include introductory chapters presenting the historical background of the subject; classical elasticity; computational solid modeling; continuum mechanics; fracture mechanics; particle dynamics simulations on parallel computers; as well as example simulations (with model applications).

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