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Further Reading4 Triangle to Edge Contact Interaction in 2D; 4.1 Problem Description; 4.2 Integration of Normal Contact Force; 4.3 Tangential Force; 4.4 Equivalent Nodal Forces; Further Reading; 5 Ball to Surface Contact Interaction in 3D; 5.1 Problem Description; 5.2 Integration of Normal Contact Force; 5.3 Tangential Force; 5.4 Equivalent Nodal Forces; Further Reading; 6 Tetrahedron to Points Contact Interaction in 3D; 6.1 Problem Description; 6.2 Integration of Normal Contact Force; 6.3 Tangential Force; 6.4 Equivalent Nodal Forces; Further Reading
7 Tetrahedron to Triangle Contact Interaction in 3D7.1 Problem Description; 7.2 Integration of Normal Contact Force; 7.3 Tangential Force; 7.4 Equivalent Nodal Forces; Further Reading; 8 Rock Joints; 8.1 Introduction; 8.2 Interaction between Mesh Entities in 2D; 8.2.1 Interaction between a 2D Disk and a Straight Edge; 8.2.2 Numerical Integration of the Roller-Edge Interaction; 8.3 Joint Dilation; 8.4 Shear Resistance of a 2D Rock Joint; 8.5 Numerical Examples; References; Further Reading; 9 MR Contact Detection Algorithm for Bodies of Similar Size; 9.1 The Challenge
9.2 Constraints of MR Contact Detection Algorithm9.3 Space Decomposition; 9.4 Mapping of Spherical Bounding Boxes onto Cells; 9.5 Spatial Sorting; 9.6 Quick Sort Algorithm; 9.7 MR-Linear Sort Algorithm; 9.8 Implementation of the MR-Linear Sort Algorithm; 9.9 Quick Search Algorithm; 9.10 MR-Linear Search Algorithm; 9.11 CPU and RAM Performance; 9.12 CPU Performance and RAM Consumption; References; Further Reading; 10 MR Contact Detection Algorithm for Bodies of Different Sizes; 10.1 Introduction; 10.2 Description of the Multi-Step-MR Algorithm (MMR); 10.3 Polydispersity; 10.4 CPU Performance
10.5 RAM Requirements

Sommario/riassunto

Mechanics of Discontinua is the first book to comprehensively tackle both the theory ofthis rapidly developing topic and the applications that span a broad field of scientific and engineering disciplines, from traditional engineering to physics of particulates, nano-technology and micro-flows. Authored by a leading researcher who has been at the cutting edge of discontinua simulation developments over the last 15 years, the book is organized into four parts: introductory knowledge, solvers, methods and applications. In the first chapter a short revision of Continuum Mechanics together with ten