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Nota di contenuto	UNDERSTANDING THE DISCRETE ELEMENT METHOD SIMULATION OF NON-SPHERICAL PARTICLES FOR GRANULARAND MULTI-BODY SYSTEMS; Copright; Contents; Exercises; About the Authors; Preface; Acknowledgements; List of Abbreviations; 1 Mechanics; 1.1 Degrees of freedom; 1.1.1 Particle mechanics and constraints; 1.1.2 From point particles to rigid bodies; 1.1.3 More context and terminology; 1.2 Dynamics of rectilinear degrees of freedom; 1.3 Dynamics of angular degrees of freedom; 1.3.1 Rotation in two dimensions; 1.3.2 Moment of inertia; 1.3.3 From two to three dimensions 1.3.4 Rotation matrix in three dimensions1.3.5 Three-dimensional moments of inertia; 1.3.6 Space-fixed and body-fixed coordinate systems andequations of motion; 1.3.7 Problems with Euler angles; 1.3.8 Rotations represented using complex numbers; 1.3.9 Quaternions; 1.3.10 Derivation of quaternion dynamics; 1.4 The phase space; 1.4.1 Qualitative discussion of the time dependence of linear

Sommario/riassunto

Gives readers a more thorough understanding of DEM and equips researchers for independent work and an ability to judge methods related to simulation of polygonal particles Introduces DEM from the fundamental concepts (theoretical mechanics and solidstate physics), with 2D and 3D simulation methods for polygonal particlesProvides the fundamentals of coding discrete element method (DEM) requiring little advance knowledge of granular matter or numerical simulationHighlights the numerical tricks and pitfalls that are usually only realized after years o