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Autore	Munjiza Ante
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Nota di contenuto	The Combined Finite-Discrete Element Method; Contents; Preface; Acknowledgements; 1 Introduction; 1.1 General Formulation of Continuum Problems; 1.2 General Formulation of Discontinuum Problems; 1.3 A Typical Problem of Computational Mechanics of Discontinua; 1.4 Combined Continua-Discontinua Problems; 1.5 Transition from Continua to Discontinua; 1.6 The Combined Finite-Discrete Element Method; 1.7 Algorithmic and Computational Challenge of the Combined Finite-Discrete Element Method; 2 Processing of Contact Interaction in the Combined Finite Discrete Element Method; 2.1 Introduction 2.2 The Penalty Function Method2.3 Potential Contact Force in 2D; 2.4 Discretisation of Contact Force in 2D; 2.5 Implementation Details for Discretised Contact Force in 2D; 2.6 Potential Contact Force in 3D; 2.6.1 Evaluation of contact force; 2.6.2 Computational aspects; 2.6.3 Physical interpretation of the penalty parameter; 2.6.4 Contact damping; 2.7 Alternative Implementation of the Potential Contact

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 3.8.4 Representation of mapping; 3.9 Selection of Contact Detection Algorithm; 3.10 Generalisation of Contact Detection Algorithms to 3D Space; 3.10.1 Direct checking contact detection algorithm; 3.10.2 Binary tree search; 3.10.3 Screening contact detection algorithm; 3.10.4 Direct mapping contact detection algorithm; 3.11 Generalisation of Munjiza-NBS Contact Detection Algorithm to Multidimensional Space; 3.12 Shape and Size Generalisation-Williams C-GRID Algorithm;  
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 5.2 Dynamics of Irregular Discrete Elements Subject to Finite Rotations in 3D

## Sommario/riassunto

The combined finite discrete element method is a relatively new computational tool aimed at problems involving static and / or dynamic behaviour of systems involving a large number of solid deformable bodies. Such problems include fragmentation using explosives (e.g rock blasting), impacts, demolition (collapsing buildings), blast loads, digging and loading processes, and powder technology. The combined finite-discrete element method - a natural extension of both discrete and finite element methods - allows researchers to model problems involving the deformability of either one solid body,