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aperture radar interferometry (InSAR); 2.3.6. Global navigation satellite system (GNSS); 2.4. Examples of applications; 2.4.1. Detection of rock slope instabilities; 2.4.2. Geometry and structure analysis
2.4.3. Movement detection and characterization2.4.4. Monitoring and real-time warning; 2.5. Perspectives; 2.6. Conclusions; 2.7. Bibliography; Chapter 3. Mechanical Stability Analyses of Fractured Rock Slopes; 3.1. Introduction; 3.2. Experimental study of rock joint behavior; 3.2.1. Description of natural rock joints; 3.2.2. Compression behavior of natural rock joints; 3.2.3. Shear behavior of natural rock joints; 3.2.4. Behavior of natural rock joints under other loading paths; 3.3. Failure computations of rigid blocks; 3.3.1. Geometrical aspects of block failure
3.3.2. Mechanical aspects of failure computation3.3.3. Examples of deterministic and probabilistic stability analyses; 3.3.4. Conclusion on failure computations; 3.4. Overview of different stress-strain analyses; 3.4.1. Different stress-strain methods; 3.4.2. Continuous approaches with joints; 3.4.3. Discrete methods; 3.4.4. Distinct element modeling; 3.4.5. NSCD method; 3.4.6. Hybrid methods; 3.5. An advanced stress-strain analysis of failure; 3.5.1. Framework of the analysis; 3.5.2. A new rock joint constitutive relation: the INL2 relation; 3.5.3. Stability analysis of INL2 relation
3.5.4. A stress-strain analysis of a rock slope3.6. Conclusions; 3.7. Bibliography; Chapter 4. Assessment of Constitutive Behaviors in Jointed Rock Masses from a DEM Perspective; 4.1. Introduction; 4.2. Discrete Element Modeling of rock materials; 4.3. Representation of rock discontinuities; 4.3.1. Smooth joint contact; 4.3.2. Synthetic rock joint; 4.3.3. Shear behavior of rough joints; 4.4. Synthetic Rock Mass modeling methodology; 4.4.1. Rock mass structural representation; 4.4.2. Equivalent rock mass model; 4.4.3. Rock mass constitutive behavior; 4.4.4. Anisotropy in rock mass properties
4.5. Analysis of specific mechanical behaviors: case studies

Sommario/riassunto

Rockfall Engineering is an up-to-date, international picture of the state of the art in rockfall engineering.The three basic stages of rockfalls are considered: the triggering stage, the motion stage, and the interaction with a structure stage; along with contributions including structural characterization of cliffs, remote monitoring, stability analysis, boulder propagation, design of protection structures an risk assessment. Academic contributions are illustrated by practical examples, and completed by engineering contributions where practical purposes are thoroughly considered. This