

1. Record Nr.	UNINA9910146623303321
Titolo	Modelling critical and catastrophic phenomena in geoscience : a statistical physics approach // Pratip Bhattacharyya, Bikas K. Chakrabarti (editors)
Pubbl/distr/stampa	Berlin ; ; New York : , : Springer, , [2006] ©2006
ISBN	1-280-62741-7 9786610627417 3-540-35375-5
Edizione	[1st ed. 2006.]
Descrizione fisica	1 online resource (529 p.)
Collana	Lecture notes in physics ; ; 705
Disciplina	551.22
Soggetti	Seismology - Statistical methods Earthquakes - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Papers originally presented at a workshop on "Models of Earthquakes: Physics Approaches", held in Saha Institute of Nuclear Physics, Kolkata in December 2005.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Tutorial: Introductory Material -- Statistical Physics of Fracture and Earthquake -- Rupture Processes in Fibre Bundle Models -- Extensions of Fibre Bundle Models -- Survey of Scaling Surfaces -- Physics Models of Earthquake -- Some Early Earthquake Source Models -- Geometric Models of Earthquakes -- Friction, Stick-Slip Motion and Earthquake -- Statistical Features of Earthquake Temporal Occurrence -- Spatiotemporal Correlations of Earthquakes -- Space-time Combined Correlation Between Earthquakes and a New, Self-Consistent Definition of Aftershocks -- Short-Term Prediction of Medium and Large-Size Earthquakes Based on Markov and Extended Self-Similarity Analysis of Seismic Data -- Why Does Theoretical Physics Fail to Explain and Predict Earthquake Occurrence? -- Modelling Related Phenomena -- Aeolian Transport and Dune Formation -- Avalanches and Ripples in Sandpiles -- Dynamics of Stick-Slip: Some Universal and Not So Universal Features -- Search for Precursors in Some Models of Catastrophic Failures -- Miscellaneous Short Notes -- Nonlinear Analysis of Radon Time Series Related to Earthquake -- A

Thermomechanical Model of Earthquakes -- Fractal Dimension of the 2001 El Salvador Earthquake Time Series -- Approach in Time to Breakdown in the RRTN Model -- Critical Behaviour of Mixed Fibres with Uniform Distribution.

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Sommario/riassunto

This book presents a broad survey of models for critical and catastrophic phenomena in the geosciences, with strong emphasis on earthquakes. It assumes the perspective of statistical physics, which provides the theoretical frame for dealing with complex systems in general. This volume addresses graduate students wishing to specialize in the field and researchers working or interested in the field having a background in the physics, geosciences or applied mathematics.

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