1. Record Nr. UNINA9910257419203321

Titolo	Non-Linearity and Breakdown in Soft Condensed Matter [[electronic resource]] : Proceedings of a Workshop Held at Calcutta, India 1–9 December 1993 / / edited by Kamal K. Bardhan, Bikas K. Chakrabarti, Alex Hansen
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 1994
ISBN	3-540-49037-X
Edizione	[1st ed. 1994.]
Descrizione fisica	1 online resource (XI, 340 p. 70 illus.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 437
Disciplina	620.1/123
Soggetti	Condensed matter Geophysics Physics Mechanics Mechanics, Applied Condensed Matter Physics Geophysics/Geodesy Mathematical Methods in Physics Numerical and Computational Physics, Simulation Classical Mechanics Theoretical and Applied Mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Decompaction, fluidisation and segregation in a 2D sandpile -- Granular flow: Some experimental results -- Density waves in granular flow -- Height fluctuations and pressure distribution in a model of random close packing of mono-size discs -- Statics and dynamics of sandpiles: Some phenomenological ideas -- Some physical properties of the Burridge-Knopoff model -- Jerky flow, stick-slip in geological materials and earthquake models -- Dynamics and structure of displacement fronts in two-dimensional porous media -- Heterogeneous porous media: Fronts and noise -- Pattern formation in particulate complex fluids: A guided tour -- Solvable models of

material breakdown -- Fracture and other breakdown phenomena in disordered solids -- Spring-network and finite-element models for elasticity and fracture -- Ginzburg-Landau form description for steps on creep curves -- Laboratory simulation of dielectric breakdown -- Fracture roughness and physical implications -- Rock fracturing by gas loading for well stimulation -- Physics of random nonlinear composites -- Scaling behavior of electric response in a non-linear composite -- Non-linear effects at the critical supercurrent in Josephson Junctions arrays -- Field-induced transport in random media -- Percolation and tunneling in the quantum hall effect.

Sommario/riassunto

There have been considerable advances in recent times in understanding many common material processes that are of practical importance, such as nonlinear response, fracture, breakdown, earthquakes, packing, and granular flow, that are of immense practical importance. This has been mainly due to new applications of statistical physics, including percolation theory, fractal concepts and self-organized criticality. This collection of articles brings together research in those closely allied fields. It deals with problems in material science involving random geometries and nonlinearity at a mesoscopic scale, where local disorder and nonlinearity influence the global behaviour of cracks, for example, and problems where randomness in time evolution is as crucial as the geometry itself.