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	Titolo	Deformation and Fracture of Solid-State Materials : Field Theoretical Approach and Engineering Applications / / by Sanichiro Yoshida
	Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Springer, , 2015
	ISBN	1-4939-2098-7
	Edizione	[1st ed. 2015.]
	Descrizione fisica	1 online resource (250 p.)
	Disciplina	620 620.1 620.11
	Soggetti	Mechanics Mechanics, Applied Materials science Solid Mechanics Theoretical and Applied Mechanics Characterization and Evaluation of Materials
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Description based upon print version of record.
	Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
	Nota di contenuto	Introduction.- Quick Review of Theories of Elastic Deformation.-Quick Review of Field Theories.- Field Theory of Deformation and Fracture -- Interpretations of Deformation and Fracture Phenomena from Field Theoretical Viewpoint.- Optical Interferometry and Application to Material Characterization -- Experimental Observations -- Applications.
	Sommario/riassunto	This book introduces a comprehensive theory of deformation and fracture to engineers and applied scientists. The author explains the gist of local symmetry (gauge invariance) intuitively so that engineers and applied physicists can digest it easily, rather than describing physical or mathematical details of the principle. Applications of the theory to practical engineering are also described, such as nondestructive testing, in particular, with the use of an optical interferometric technique called ESPI (Electronic Speckle-Pattern Interferometry). The book provides information on how to apply

physical concepts to engineering applications. This book also:

· Describes a highly original way to reveal loading hysteresis of a given specimen · Presents a fundamentally new approach to deformation and fracture, which offers potential for new applications · Introduces the unique application of Electric Speckle-Pattern Interferometry—reading fringe patterns to connect them to the current deformation status · Details engineering applications of gauge theory · Visualizes otherwise abstract concepts of local symmetry and gauge field.