1.	Record Nr.	UNINA9910141636203321
	Autore	Cursi Eduardo Souza de
	Titolo	Modeling and convexity / / Eduardo Souza de Cursi, Rubens Sampaio
	Pubbl/distr/stampa	London, England ; ; Hoboken, New Jersey : , : ISTE : , : Wiley, , 2010 ©2010
	ISBN	1-118-62243-X 1-118-62239-1 1-118-62232-4
	Descrizione fisica	1 online resource (517 p.)
	Collana	ISTE
	Disciplina	620.001/51 620.00151 620.00151976
	Soggetti	Engineering mathematics Machinery - Mathematical models Convex sets
	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 and index.
	Nota di contenuto	Cover; Title Page; Copyright Page; Table of Contents; Introduction; PART 1. MOTIVATION: EXAMPLES AND APPLICATIONS; Chapter 1. Curvilinear Continuous Media; 1.1. One-dimensional curvilinear media; 1.1.1. Ideally flexible string; 1.1.1.1. The essential difficulty; 1.1.1.2. Unilateral contact; 1.1.2. The ""elastica"" problem: buckling of an inextensible beam; 1.2. Supple membranes; 1.2.1. Curvilinear coordinates and charts; 1.2.2. Metric tensor; 1.2.3. Internal efforts and constitutive law; 1.2.4. Exterior efforts; 1.2.5. Infinitesimal deformations; 1.2.6. Principle of minimum energy Chapter 2. Unilateral System Dynamics2.1. Dynamics of ideally flexible strings; 2.1.1. Propagation of discontinuities; 2.1.2. Evolution; 2.1.3. Vibrations; 2.1.3.1. Harmonic response; 2.1.3.2. Small oscillations; 2.2. Contact dynamics; 2.2.1. Evolution of a material point; 2.2.2. Evolution of deformable and non-deformable solids; 2.2.3. Granular modeling of the movement of a crowd; Chapter 3. A Simplified Model of Fusion/Solidification; 3.1. A simplified model of phase transition; Chapter 4. Minimization of a Non-Convex Function; 4.1. Probabilities,

Sommario/riassunto

This reference book gives the reader a complete but comprehensive presentation of the foundations of convex analysis and presents applications to significant situations in engineering. The presentation of the theory is self-contained and the proof of all the essential results is given. The examples consider meaningful situations such as the modeling of curvilinear structures, the motion of a mass of people or the solidification of a material. Non convex situations are considered by means of relaxation methods and the connections between probability and convexity are explored and exploited in o