1.	Record Nr.	UNINA9910299772103321
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	Titolo	Mathematical Models with Singularities [[electronic resource]] : A Zoo of Singular Creatures / / by Pedro J. Torres
	Pubbl/distr/stampa	Paris : , : Atlantis Press : , : Imprint : Atlantis Press, , 2015
	ISBN	94-6239-106-8
	Edizione	[1st ed. 2015.]
	Descrizione fisica	1 online resource (130 p.)
	Collana	Atlantis Briefs in Differential Equations, , 2405-6405 ; ; 1
	Disciplina	510 515.352 519
	Soggetti	Differential equations Mathematical physics Ordinary Differential Equations Mathematical Applications in the Physical Sciences
	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	Motion of charged particles in a line -- An electrostatically actuated micro-electro-mechanical system -- Forced Keplerian-like systems -- Particles under a central force eld -- Bose-Einstein condensates and signal transmission in optical bers -- Electron beam focusing by means of a periodic magnetic eld -- Point vortex dynamics -- Pumping effect in a pipe/tank ow conguration -- Radial oscillations of a bubble in a time-periodic pressure eld -- Radial oscillations of cylindrical and spherical shells -- A model for cell volume regulation.
	Sommario/riassunto	The book aims to provide an unifying view of a variety (a 'zoo') of mathematical models with some kind of singular nonlinearity, in the sense that it becomes infinite when the state variable approaches a certain point. Up to 11 different concrete models are analyzed in separate chapters. Each chapter starts with a discussion of the basic model and its physical significance. Then the main results and typical proofs are outlined, followed by open problems. Each chapter is closed by a suitable list of references. The book may serve as a guide for researchers interested in the modelling of real world processes.