1. Record Nr. UNISALENTO991002222539707536

Autore	Yafaev, Dmitri R.
Titolo	Scattering theory : some old and new problems [e-book] / by Dmitri R. Yafaev
Pubbl/distr/stampa	Berlin : Springer, 2000
ISBN	9783540451709
Descrizione fisica	1 online resource (xvi, 169 p.)
Collana	Lecture Notes in Mathematics, 0075-8434 ; 1735
Classificazione	AMS 35P AMS 47A AMS 81U
Disciplina	515.353
Soggetti	Mathematics Differential equations, partial Mathematical physics
Lingua di pubblicazione	Inglese
Formato	Risorsa elettronica
Livello bibliografico	Monografia

2.	Record Nr.	UNINA9910825094703321
	Autore	Zhang Bo <1962 January->
	Titolo	Chaos analysis and chaotic EMI suppression of DC-DC converters / / Bo Zhang, Xuemei Wang
	Pubbl/distr/stampa	Singapore : , : John Wiley & Sons, Inc., , 2014 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2015]
	ISBN	1-118-45110-4 1-118-45111-2 1-118-45112-0
	Descrizione fisica	1 online resource (291 pages) : illustrations
	Classificazione	TEC031020
	Altri autori (Persone)	WangXuemei (Electrical engineer)
	Disciplina	621.31/32
	Soggetti	DC-to-DC converters Electromagnetic interference - Prevention Chaotic behavior in systems
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Cover; Title Page; Copyright; Contents; About the Authors; Preface; Acknowledgments; Chapter 1 Nonlinear Models and Behaviors of DC-DC Converters; 1.1 Introduction; 1.2 Overview of PWM DC-DC Converters; 1.2.1 Principle of Pulse Width Modulation; 1.2.2 Basic Topologies of DC-DC Converters; 1.2.3 Operation Modes of DC-DC Converters; 1.2.4 State-Space Model of DC-DC Converters; 1.2.5 Discrete Model of DC-DC Converters; 1.3 Overview of the Nonlinear Behavior of DC-DC Converters; 1.4 Review of Basic Dynamics Concepts; 1.4.1 Dynamical System; 1.4.2 Linear and Nonlinear Dynamical Systems. 1.4.3 Characterization of Nonlinear Behavior1.5 Conclusions; References; Chapter 2 Symbolic Analysis of the Nonlinear Behavior of DC-DC Converters; 2.1 Introduction; 2.2 Overview of the Time Series Principle of Discrete Systems; 2.2.1 Symbolic Dynamics and Symbolic Time Series; 2.2.2 Symbolization Method; 2.2.3 Symbolic Dynamics of a Period-Doubling Cascade; 2.3 Block Entropy; 2.4 Symbolic Time Series Analysis of DC-DC Converters; 2.4.1 Period-Doubling Bifurcation and Chaos of DC-DC Converters; 2.4.2 Border Collision Bifurcation and

Chaos of DC-DC Converters; 2.5 Conclusions; References.

Chapter 3 Complexity of the Nonlinear Behavior of DC-DC Converters3. 1 Introduction; 3.2 Lempel-Ziv Complexity and Analysis of Nonlinear Behavior of DC-DC Converters Based on L-Z Complexity; 3.2.1 Lempel-Ziv Complexity; 3.2.2 Analysis of Lempel-Ziv Complexity of Buck Converter; 3.3 Switching Block of DC-DC Converters; 3.4 Weight Lempel-Ziv Complexity and Analysis of Nonlinear Behavior of DC-DC Converters Based on Weight L-Z Complexity; 3.4.1 Weight Lempel-Ziv Complexity; 3.4.2 Weight Lempel-Ziv Complexity of Buck Converter. 3.4.3 Qualitative Analysis of Bifurcation Phenomena Based on Complexity3.5 Duplicate Symbolic Sequence and Complexity; 3.5.1 Main Switching Block and Main Symbolic Sequence; 3.5.2 Secondary Switching Block and Secondary Symbolic Sequence; 3.5.3 Duplicate Symbolic Sequence; 3.5.4 Analysis of Border Collision and Bifurcation in DC-DC Converters Based on Duplicate Symbolic Sequence; 3.6 Applied Example; 3.7 Conclusions; References; Chapter 4 Invariant Probability Distribution of DC-DC Converters; 4.1 Introduction; 4.2 Invariant Probability Distribution of Chaotic Map.
4.3 Calculating Invariant Probability Distribution of the Chaotic Discrete-Time Maps with Eigenvector Method4.4 Invariant Probability Distribution of the Chaotic Mapping of the Boost Converter; 4.5 Application Examples of Invariant Probability Distribution; 4.5.1 Power Spectral Density of the Input Current in a DC-DC Converters; 4.5.2 Average Switching Frequency; 4.5.3 Parameter Design with Invariant Probability Distribution; 4.6 Conclusions; References; Chapter 5 EMI and EMC of Switching Power Converters; 5.1 Introduction; 5.2 EMI Origin of Electric Circuits.

Sommario/riassunto

"Introduces chaos theory, its analytical methods and the means to apply chaos to the switching power supply designDC-DC converters are typical switching systems which have plenty of nonlinear behaviors, such as bifurcation and chaos. The nonlinear behaviors of DC-DC converters have been studied heavily over the past 20 years, yet researchers are still unsure of the practical application of bifurcations and chaos in switching converters. The electromagnetic interference (EMI), which resulted from the high rates of changes of voltage and current, has become a major design criterion in DC-DC converters due to wide applications of various electronic devices in industry and daily life, and the question of how to reduce the annoying, harmful EMI has attracted much research interest. This book focuses on the analysis and application of chaos to reduce harmful EMI of DC-DC converters. After a review of the fundamentals of chaos behaviors of DC-DC converters, the authors present some recent findings such as Symbolic Entropy, Complexity and Chaos Point Process, to analyze the characters of chaotic DC-DC converters. Using these methods, the statistic characters of chaotic DC-DC converters are extracted and the foundations for the following researches of chaotic EMI suppression are reinforced. The focus then transfers to estimating the power spectral density of chaotic PWM converters behind an introduction of basic principles of spectrum analysis and chaotic PWM technique. Invariant Density, and Prony and Wavelet analysis methods are suggested for estimating the power spectral density of chaotic PWM converters. Finally, some design-oriented applications provide a good example of applying chaos theory in engineering practice, and illustrate the effectiveness on suppressing EMI of the proposed chaotic PWM. Introduces chaos theory, its analytical methods and the means to apply chaos to the switching power supply design Approaches the subject in a systematic manner from analyzing method, chaotic phenomenon and EMI characteristics, analytical methods for chaos, and applying chaos to

reduce EMI (electromagnetic interference) Highlights advanced research work in the fields of statistic characters of nonlinear behaviors and chaotic PWM technology to suppress EMI of switching converters Bridges the gap between numerical theory and real-world applications, enabling power electronics designers to both analyze the effects of chaos and leverage these effects to reduce EMI "-
"Introduces chaos theory, its analytical methods and the means to apply chaos to the switching power supply design"-