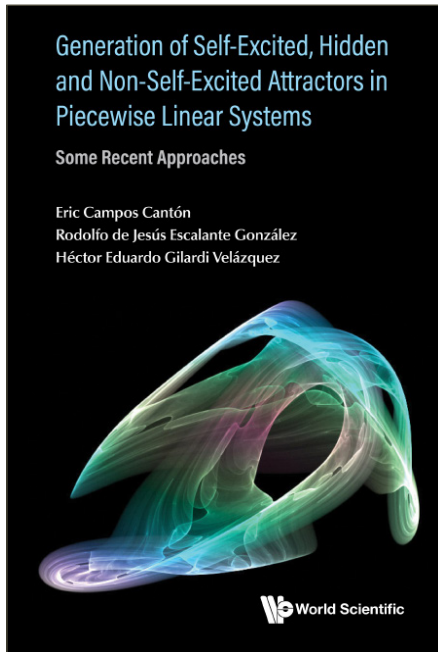


Generation of Self-Excited, Hidden and Non-Self-Excited Attractors in Piecewise Linear Systems

Some Recent Approaches



By Eric Campos Cantón

(Instituto Potosino de Investigación Científica y Tecnológica A.C., Mexico)

Rodolfo de Jesús Escalante González

(Technological Institute of San Luis Potosí, Mexico)

Héctor Eduardo Gilardi Velázquez

(Universidad Panamericana, Aguascalientes, Mexico)

ISBN 9789811274114

Extent: 192pp, HB

Pub Date: 2023

Price: US\$78

Subject: Mathematics

ABOUT THE BOOK

What kind of dynamics is a piecewise linear system able to display? How may they generate heteroclinic chaos? How can the coexistence of attractors be designed and characterized? Is it necessary to have equilibrium points to generate chaotic behavior? Chaos theory and complex systems are interesting and evolving topics whose investigation from a theoretical and practical point of view constantly leads to arising questions. Interesting behaviors can be observed in self-excited attractors, hidden attractors and non-self-excited attractors.

This book presents some fundamentals of linear system theory and recent approaches to design the three classes of chaotic attractors in piecewise linear systems. Each chapter presents a brief description and basic concepts to provide an overview of linear systems theory; chaos and multistability in integer linear systems; hidden and non-self-excited attractors; and fractional approaches. They also provide example systems to illustrate the concepts and design methods introduced. Some current topics under investigation are addressed from an integer order perspective to make the connection with the fractional order counterpart.

This textbook provides a comprehensive introduction, methodologies, and analysis tools to study chaotic piecewise linear systems and will be suitable for undergraduate or graduate students interested in the field of chaos and complex dynamics.

READERSHIP

Advanced undergraduate and graduate students, researchers in Chaos and complex systems. General public interested in topics related to chaos theory.

CONTENTS

- Preface
- Introduction to Dynamical Systems and Chaos
- Systems with Self-excited Attractors
- Systems with Hidden Attractors
- Fractional-order PWL Systems
- Bibliography
- Index

ABOUT THE AUTHORS

Eric Campos Cantón is Professor in the Division of control and dynamical systems, Instituto Potosino de investigación Científica y tecnológica A.C., Mexico, and head of the Nonlinear and Chaotic Dynamics Laboratory. He is a member of the Researches National System, Mexico (CONACYT). He edited the book “Complex Systems and Their Applications” (Springer, 2022). As of 2022, He has been Associate Editor for *Journal of Applied Nonlinear Dynamics* (L&H Scientific Publishing), *Frontiers in Applied Mathematics and Statistics* (Frontier). He has also been academic editor for *Mathematical Problems in Engineering, and Complexity* since 2018, and Member of the scientific committee of the journal “Informador Técnico del SENA Centro ASTIN de Cali” since 2013. He was guest editor for special issues “Open Challenges on the Stability of Complex Systems: Insights of Nonlinear Phenomena with or without Delay” (*Complexity*, 2019), “New Trends on Modeling, Design, and Control of Chaotic Systems” (*Mathematical Problems in Engineering*, 2017), “Preservation of relevant properties of interconnected dynamical systems over complex network”, (*Journal of the Franklin Institute*, 2013), and “Complex discrete dynamics and its structures in bioinspired systems”, (*Discrete Dynamics in Nature and Society*, 2013).

Rodolfo de Jesús Escalante González is professor at Electrical, Electronics and Mechatronics Department, Technological Institute of San Luis Potosí, Mexico. He is a member of the Researches National System, Mexico (CONACYT).

Héctor Eduardo Gilardi Velázquez is professor at Facultad de Ingeniería, Universidad Panamericana Campus Aguascalientes, Mexico. He is a member of the Researches National System, Mexico (CONACYT).

For orders and enquiries, please contact us:



FEELBOOKS PVT. LTD.

www.feelbooks.in

DELHI	4381/4 Ansari Road, Daryaganj, New Delhi 110002 Pushpendra Kumar	Tel: +91-11-47472630 Mobile: +91 9015043442	Email: orders@feelbooks.in
BENGALURU	C-22, Brigade MM, KR Road, Jayanagar 7th Block, Bengaluru 560070 Shekar Reddy	Tel: +91-80-26762129 Mobile: +91 9945234476	Email: bangalore@feelbooks.in
MUMBAI	Alok Dube	Mobile: +91 9833435804	Email: adube@feelbooks.in
CHENNAI	G Srinivasan	Mobile: +91 9003047502	Email: gsrinivasan@feelbooks.in
KOLKATA	Dhrubajyoti Bhattacharjee	Mobile: +91 9836160013	Email: dbhattacharjee@feelbooks.in
HYDERABAD	Kundan Kumar.S	Mobile: +91 8106726072	Email: kundan@feelbooks.in

For any queries, please email us at marketing@feelbooks.in