

theories, dimensional analysis, and qualitative analysis of dynamical systems. There are also simple explanations of sophisticated tools, including agent-based models and complex networks. I personally loved the book's spherical-cow attitude—though I should talk about “spherical viruses” in this case—and I use this approach in my daily working routine.

The tone is relaxed and matter-of-fact, and Weitz avoids promoting specific visions, paradigms, or interpretations. Rather, he gives a precise account of the state of debates in the literature and explicitly addresses both the limitations and the potential of current approaches. Chapter 2, one of my favorites, contains dimensional analysis of the key parameters—“life history traits” in ecological terms—that affect viral dynamics. It contains some extraordinarily clear demonstrations of the powerful insight dimensional reasoning can provide. Chapter 6 is also intriguing; it gives a global perspective on ocean viruses' abundance and diversity and discusses virus-microbe infection networks. Viral diversity and sheer number are incredible and probably still incompletely understood.

Chapters 3–5 use ordinary differential equation models to describe population dynamics and the evolution of viruses and their microbial hosts. Chapter 7 addresses the wide-open and complex problem of the coexistence of many viral and microbial species in the ocean, where predators such as zooplankton are also

present. The last chapter offers a more speculative overview of open problems and should be valuable for any reader.

My favorite quote from the book is, “A healthy scientific field requires a balance of theory and empiricism,” and I can definitively say that the text practices what its author preaches. Although the emphasis is on theory, both classic and state-of-the-art experiments are discussed and compared with predictions—and at times theory and experiment obviously disagree. Readers with an experimental background can obtain ideas for new experiments and specific questions to test.

The book will be especially exciting for theorists with an applied math, engineering, or physics background. According to Weitz, quantitative viral ecology is an area in which new, “big” data are becoming available. But, as many probably know, a big pile of messy data does not necessarily mean more knowledge. New theoretical tools will be needed, together with new theoreticians to design them. *Quantitative Viral Ecology* offered me a great opportunity to discover a new area, and I cannot exclude the possibility that I will be among those exploring it.

Marco Cosentino Lagomarsino

*Sorbonne, Pierre and Marie Curie
University
CNRS
Paris, France*

*IFOM, the FIRIC Institute of Molecular
Oncology
Milan, Italy*

NEW BOOKS

Acoustics

Electromagnetic Acoustic Transducers: Non-contacting Ultrasonic Measurements Using EMATs. 2nd ed. M. Hirao, H. Ogi. Springer, 2017. \$129.00 (381 pp.). ISBN 978-4-431-56034-0

Underwater Acoustics and Ocean Dynamics. L. Zhou, W. Xu, Q. Cheng, H. Zhao, eds. Zhejiang U. Press and Springer, 2016. \$199.00 (127 pp.). ISBN 978-981-10-2421-4

Astronomy and astrophysics

Cosmic Magnetic Fields. P. P. Kronberg. Cambridge U. Press, 2016. \$140.00 (283 pp.). ISBN 978-0-521-63163-1

Making Beautiful Deep-Sky Images: Astrophotography with Affordable Equipment and Software. 2nd ed. G. Parker. Springer, 2017. \$29.00 *paper* (189 pp.). ISBN 978-3-319-46315-5

Observing Nebulae. M. Griffiths. Springer, 2016.

\$34.00 *paper* (289 pp.). ISBN 978-3-319-32882-9

Oscillations of Disks. S. Kato. Springer, 2016. \$129.00 (261 pp.). ISBN 978-4-431-56206-1

Video Astronomy on the Go: Using Video Cameras with Small Telescopes. J. Ashley. Springer, 2017. \$34.99 *paper* (205 pp.). ISBN 978-3-319-46935-5

Atomic and molecular physics

EXA 2014: Proceedings of the International Conference on Exotic Atoms and Related Topics. P. Bühler et al., eds. Springer, 2017. \$169.00 (169 pp.). ISBN 978-3-319-45016-2

Biological and medical physics

Bioelectrics. H. Akiyama, R. Heller, eds. Springer, 2017. \$179.00 (481 pp.). ISBN 978-4-431-56093-7

Biological Adhesives. 2nd ed. A. M. Smith, ed.

Springer, 2016. \$199.00 (378 pp.). ISBN 978-3-319-46081-9

Environmental Radiation Effects on Mammals: A Dynamical Modeling Approach. 2nd ed. O. A. Smirnova. Springer, 2017. \$179.00 (359 pp.). ISBN 978-3-319-45759-8

LED Lighting for Urban Agriculture. T. Kozai, K. Fujiwara, E. S. Runkle, eds. Springer, 2016. \$179.00 (454 pp.). ISBN 978-981-10-1846-6

Monte Carlo Methods for Radiation Transport: Fundamentals and Advanced Topics. O. N. Vassiliev. Springer, 2017. \$129.00 (281 pp.). ISBN 978-3-319-44140-5

Proteinuria: Basic Mechanisms, Pathophysiology and Clinical Relevance. J. Blaine, ed. Springer, 2016. \$159.00 (145 pp.). ISBN 978-3-319-43357-8

Chemical physics

50 Years of Structure and Bonding – the Anniversary Volume. D. M. P. Mingos, ed. Springer, 2016. \$259.00 (347 pp.). ISBN 978-3-319-35136-0

Azo Polymers: Synthesis, Functions and Applications. X. Wang. Springer, 2017. \$179.00 (230 pp.). ISBN 978-3-662-53422-9

Capillary Electrophoresis–Mass Spectrometry: Therapeutic Protein Characterization. J. Q. Xia, L. Zhang, eds. Springer, 2016. \$129.00 (74 pp.). ISBN 978-3-319-46238-7

Essentials of Pericyclic and Photochemical Reactions. B. Dinda. Springer, 2017. \$129.00 (350 pp.). ISBN 978-3-319-45933-2

Helicene Chemistry: From Synthesis to Applications. C.-F. Chen, Y. Shen. Springer, 2017. \$129.00 (273 pp.). ISBN 978-3-662-53166-2

Interaction-Induced Electric Properties of van der Waals Complexes. V. N. Cherepanov, Y. N. Kalugina, M. A. Buldakov. Springer, 2017. \$54.00 *paper* (109 pp.). ISBN 978-3-319-49030-4

Introduction to Computational Mass Transfer: With Applications to Chemical Engineering. 2nd ed. K.-T. Yu, X. Yuan. Springer, 2017. \$179.00 (417 pp.). ISBN 978-981-10-2497-9

Protein-Based Engineered Nanostructures. A. L. Cortajarena, T. Z. Grove, eds. Springer, 2016. \$209.00 (286 pp.). ISBN 978-3-319-39194-6

Stochasticity in Processes: Fundamentals and Applications to Chemistry and Biology. P. Schuster. Springer, 2016. \$189.00 (718 pp.). ISBN 978-3-319-39500-5

Computers and computational physics

Computational Chemistry: Introduction to the Theory and Applications of Molecular and Quantum Mechanics. 3rd ed. E. G. Lewars. Springer, 2016. \$119.00 (728 pp.). ISBN 978-3-319-30914-9

Computational Fluid Dynamics: Incompressible Turbulent Flows. T. Kajishima, K. Taira. Springer, 2017. \$99.00 (358 pp.). ISBN 978-3-319-45302-6

Data Science and Complex Networks. G. Caldarelli, A. Chessa. Oxford U. Press, 2016. \$64.95 (130 pp.). ISBN 978-0-19-963960-1

Multimedia Forensics and Security: Foundations, Innovations, and Applications. A. E. Hassanien et al., eds. Springer, 2017. \$179.00 (414 pp.). ISBN 978-3-319-44268-6

Secure Data Deletion. J. Reardon. Springer, 2016. \$109.00 (203 pp.). ISBN 978-3-319-28777-5

Condensed-matter physics

Control of Magnetotransport in Quantum Billiards: Theory, Computation and Applications. C. V. Morfonios, P. Schmelcher. Springer, 2017. \$59.99 *paper* (252 pp.). ISBN 978-3-319-39831-0

Dynamics of Glassy, Crystalline and Liquid Ionic Conductors: Experiments, Theories, Simulations. J. Habasaki, C. León, K. L. Ngai. Springer, 2017. \$179.00 (600 pp.). ISBN 978-3-319-42389-0

Rheology of Biological Soft Matter: Fundamentals and Applications. I. Kaneda, ed. Springer, 2017. \$129.00 (390 pp.). ISBN 978-4-431-56078-4

Cosmology and relativity

Deconstructing Cosmology. R. H. Sanders. Cambridge U. Press, 2016. \$39.99 (144 pp.). ISBN 978-1-107-15526-8

Theory and mathematical methods

Advances in Discretization Methods: Discontinuities, Virtual Elements, Fictitious Domain Methods. G. Ventura, E. Benvenuti, eds. Springer, 2016. \$129.00 (269 pp.). ISBN 978-3-319-41245-0

Advances in Dynamical Systems and Control. V. A. Sadovnichiy, M. Z. Zgurovsky, eds. Springer, 2016. \$179.00 (471 pp.). ISBN 978-3-319-40672-5

Analog and Digital Signal Analysis: From Basics to Applications. F. Cohen Tenoudji. Springer, 2016. \$99.00 (608 pp.). ISBN 978-3-319-42380-7

Consensus Problem of Delayed Linear Multi-agent Systems: Analysis and Design. C.-L. Liu, F. Liu. Springer, 2017. \$54.99 *paper* (124 pp.). ISBN 978-981-10-2491-7

The Continuum Limit of Causal Fermion Systems: From Planck Scale Structures to Macroscopic Physics. F. Finster. Springer, 2016. \$129.00 (548 pp.). ISBN 978-3-319-42066-0

EPFL Lectures on Conformal Field Theory in $D \geq 3$ Dimensions. S. Rychkov. Springer, 2017. \$54.99 *paper* (72 pp.). ISBN 978-3-319-43625-8

Finite Element and Discontinuous Galerkin Methods for Transient Wave Equations. G. Cohen, S. Pernet. Springer, 2017. \$129.00 (381 pp.). ISBN 978-94-017-7759-9

Global Well-Posedness and Asymptotic Behavior of the Solutions to Non-classical Thermo(visco)elastic Models. Y. Qin, Z. Ma. Springer, 2016. \$89.99 (200 pp.). ISBN 978-981-10-1713-1

Introduction to Turbulent Dynamical Systems in Complex Systems. A. J. Majda. Springer, 2016. \$59.99 *paper* (91 pp.). ISBN 978-3-319-32215-5

Lectures in Feedback Design for Multi-variable Systems. A. Isidori. Springer, 2017.

\$99.00 (413 pp.). ISBN 978-3-319-42030-1

Mathematical and Computational Approaches in Advancing Modern Science and Engineering. J. Bélair et al., eds. Springer, 2016. \$189.00 (806 pp.). ISBN 978-3-319-30377-2

Moving Interfaces and Quasilinear Parabolic Evolution Equations. J. Prüss, G. Simonett. Birkhäuser, 2016. \$149.00 (609 pp.). ISBN 978-3-319-27697-7

Neoclassical Theory of Electromagnetic Interactions: A Single Theory for Macroscopic and Microscopic Scales. A. Babin, A. Figotin. Springer, 2016. \$189.00 (696 pp.). ISBN 978-1-4471-7282-6

Non-classical Continuum Mechanics: A Dictionary. G. A. Maugin. Springer, 2017. \$199.00 (259 pp.). ISBN 978-981-10-2433-7

Science Dynamics and Research Production: Indicators, Indexes, Statistical Laws and Mathematical Models. N. K. Vitanov. Springer, 2016. \$109.00 (285 pp.). ISBN 978-3-319-41629-8

Theoretical Physics 4: Special Theory of Relativity. W. Nolting. Springer, 2017. \$39.99 (143 pp.). ISBN 978-3-319-44370-6

Topological Quantum Numbers in Nonrelativistic Physics. Reprint. D. J. Thouless. World Scientific, 2016. \$67.00 *paper* (426 pp.). ISBN 978-981-02-3025-8

PT

New Version!

ORIGIN® 2017

Graphing & Analysis

Over 100 New Features & Apps in Origin 2017!

Over 500,000 registered users worldwide in:

- 6,000+ Companies including 20+ Fortune Global 500
- 6,500+ Colleges & Universities
- 3,000+ Government Agencies & Research Labs

For a **FREE 60-day** evaluation, go to
OriginLab.Com/demo
and enter code: **2876**

OriginLab® 25+ years serving the scientific & engineering community