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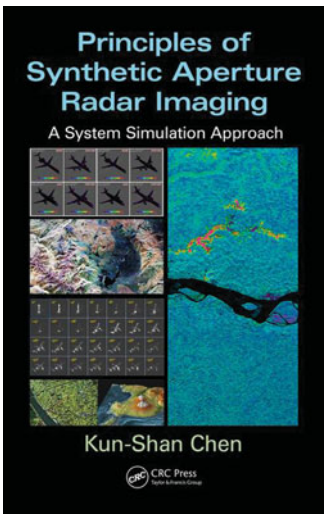
Book Reviews



Principles of Synthetic Aperture Radar Imaging: A System Simulation Approach

K.-S. Chen

CRC Press, Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL, 33487-2742, USA. 2016. Distributed by Taylor & Francis Group, 2 Park Square, Milton Park, Abingdon, OX14 4RN, UK. 203pp. Illustrated £109.(20% discount available to RAeS members via www.crcpress.com using AKQ07 promotion code). ISBN 978-1-4665-9314-5.

Synthetic Aperture Radar (SAR) is now a mainstream part of the radar art, with applications in geophysical remote sensing as well as in military surveillance. There are many different aspects to the subject: from the radar hardware to the algorithms used to form the radar images; from the phenomenology of radar propagation and electromagnetic scattering from the target scene to the extraction of geophysical information from the imagery. This book is concerned with the mathematical description of the SAR image formation process and covers similar ground in many respects to the classic *Spotlight Synthetic Aperture Radar: Signal Processing Algorithms*, (Carrara, W.G., Goodman, R.S. and Majewski, R.M. (Artech House. 1995)).

The author, Professor Kun-Shan Chen, has spent his career at the University of Texas at Arlington, and since 2014 has been at the Institute of Remote Sensing and Digital Earth, Chinese Academy of Science. He has also been an Associate Editor for the *IEEE Transactions on Geoscience and Remote Sensing*, and was a founding deputy Editor-in-Chief of the *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing.*

The book is organised in eight chapters. The first provides some preliminary background on radar signals and notation. The second introduces the basis of the SAR imaging process, including radar scattering from distributed targets. Chapter 3 develops these ideas. Chapter 4 describes the geometry of the imaging process, for both satellite orbits and aircraft paths. Chapter 5 treats the key subject of SAR processing algorithms, explaining the Range-Doppler and Chirp Scaling algorithms in detail and the advantages and disadvantages of the two approaches. Chapter 6 is concerned with motion compensation, both for aircraft-borne and satellite-borne systems. Chapter 7 covers stationary Frequency Modulated Continuous

Wave (FMCW) SAR. Finally, Chapter 8 brings all of these considerations together to how a realistic computer simulation can be assembled.

The style of the book is quite mathematical, as would be expected, but numerous diagrams are used to help explain the concepts. There are also many examples of SAR images, and a colour insert is provided in the centre of the book with these examples. Unfortunately, the book suffers from a number of typos and misspellings. These do not detract from the understanding of the book, but it is a shame that they were not detected and corrected.

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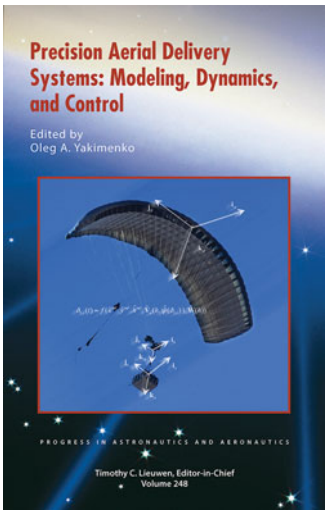

Precision Aerial Delivery Systems: Modeling, Dynamics, and Control

Edited by O. A. Yakimenko

American Institute of Aeronautics and Astronautics, 1801 Alexander Bell Drive, Suite 500, Reston, VA 20191-4344, USA. 2015. Distributed by Transatlantic Publishers Group, 97 Greenham Road, London, N10 1LN. 941pp. Illustrated £115. (20% discount available to RAeS members on request; email: mark.chaloner@tpgltd.co.uk Tel: 020–8815 5994). ISBN 978-1-62410-195-3.

The last two decades have seen tremendous progress in precision airdrop capability, largely driven by military need and realised by the use of steerable parachutes and advances in mission planning and guidance technologies. Substantial research and development efforts have been directed in particular

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