431 for an introduction to Euler angles and pages 560-568 for equations of motion of an aeroplane.

The book starts with revision of Newton mechanics with revision of calculus and vectors etc. put into appendices. Part 1 covers particle dynamics. Part 2 extends to multi-particle dynamics. Part 3 covers 2-dimenional relative motion which is extended to 3D in Part 4. Finally Part 5 introduces 'advanced topics' such as flight dynamics. But as the authors say this is just a taster for the interested student.

Each chapter teaches through examples and then concludes with tutorial examples that the authors suggest should be selected by the instructor for his students. No answers are provided, but an instructor's manual is available through the publisher's web site. Problem solving through MATLAB is included in the text.

In conclusion this is a very good introductory primer to engineering dynamics before aerospace engineers specialise in their chosen topic. Having read this they would be able to better understand a textbook on flight dynamics, even one that is not the best at explaining the subject.

Eur Ing, Mike Stanberry, MRAeS

Integrated Microwave Front-Ends: with Avionics Applications

L. G. Maloratsky

Artech House, 16 Sussex Street, London, SW1V 4RW, UK. 2012. 368pp. Illustrated. £109. ISBN 978-1-60807-205-7.

This book gives an in-depth insight into microwave front-ends and how these are applied in numerous avionic systems. Detailed coverage includes circuit integration, front-end structures and system integration. The book is supported by nearly 200 illustrations and more than 160 equations. The author has the professional experience and qualifications required to be able to describe, analyse and then publish the subject material.

The book considers circuit integration, component miniaturisation and three-dimensional design. System level integration is described for numerous microwave applications including: distance measuring equipment (DME), microwave landing systems (MLS), radio altimeters, global navigation satellite systems (GNSS), air traffic control (ATC) transponders, traffic collision avoidance systems (TCAS) and weather radar. Although the reviewer has more experience with avionic integration, installation and certification at the system level, the book's coverage of front-end micro-electronics was still of interest. The book addresses system applications for large aircraft; some coverage of general aviation would have been useful. For example, pages 12 and 216 address the subject of ATC transponders, making reference to the system requiring two antennas. This arrangement, i.e. using diversity antennas is only required for aircraft with true airspeeds greater than 250kts or maximum takeoff weight greater than 5,750kg. Aircraft below these speed/MTOW criteria can have single antennas.

The author combines and integrates numerous other publications in this book. Each chapter makes reference to a large number of supporting literature; for example chapter three has 80 specific literature references. Throughout the book, these references cover many subjects ranging from integrated circuits through industry performance standards.

The overall copy-editing, structure and layout of the book is very good and all to a high standard. The book should be an essential resource for any aerospace library, specialist RF/microwave engineers and students of advance electronics.

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