However the book is self-contained and the material has been grouped together in a way which makes it ideal for both teachers and students. Indeed I couldn't help comparing the book with my lecture notes from when I was taught the subject for the first time and noticing the similarities in the topics covered.

The first few chapters introduce basic concepts such as velocity, streamfunction, vorticity, rotational and irrotational flows and the governing equations and solves model problems. Planar and axisymmetric flows are discussed in Chapter 3 and Chapter 4 covers some of the key ideas and results including D'Alembert's paradox. The last chapter concentrates on two-dimensional inviscid, irrotational flows and solutions using complex variables. Most of the mathematical prerequisites are buried in the appendices which cover vector analysis and the important theorems used in the main body of the text.

The main strengths of the book are the choice of material and clear explanations with some excellent supporting examples. The obvious weaknesses are the lack of any meaningful discussions of real fluids. In comparison with other texts such as the popular *Informal Introduction to Theoretical Fluid Mechanics* by Lighthill, the book is quite different. Lighthill's explanations are full of expert physical understanding and written in the typical Cambridge style , whilst the current book will appeal to those studying a topic for the first time and who just need a brief and concise explanation.

The current book is also easier to follow as far as the mathematics is concerned and with more details presented. The hefty price tag of $69.95 (or £54) is disappointing and a cheaper paperback version for students would be much more desirable.

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Advanced Dynamics: Rigid Body, Multibody and Aerospace Applications

R. N. Jazar

John Wiley and Sons, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK. 2011. 1324pp. Illustrated. £100. ISBN 978-0-470-39835-7.

It is the intention of the author for the book to provide a thorough understanding of rigid body dynamics as it relates to modern mechanical and aerospace systems. It is intended to interconnect common material taught in courses such as advanced dynamics, multibody dynamics and spacecraft dynamics and is suitable for postgraduate students in both mechanical and aerospace engineering. The book is to bridge the gap between rigid-body, classical, multibody and spacecraft dynamics, but is also intended to be applied to a wide range of engineering disciplines. The author also uses the book to publish some of his recent discoveries in kinematics dynamics.

The reader must be familiar and comfortable with the maths of dynamic systems since the whole book (it has 1324 pages) is presented in terms of equations and their transformation. The author intends the book to be covered in two successive postgraduate courses or used for self study, but in my opinion (and because of its bulk) it is really an applied mathematics reference book. It provides limited provision of engineering explanation or technical feel for the subject, except through the maths. However the reader who can enter the author's mathematical mindset will be richly rewarded. Through manipulation and transformation of equations the author is able to provide good reference material for a practitioner to dip into when the need arises.

The book starts (Part I) with a review of co-ordinate system, particle dynamics, vector algebra and the equations of motion. This prepares the reader for the main body of the book. Part II covers geometric kinematics

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including rotation, orientation, motion and multibody kinematics. Part III covers derivative kinematics from velocity though acceleration to jerk kinematics and beyond, with a section on the maths of constraints to motion. The final section (Part IV) covers rigid body dynamics from different viewpoints, and concludes with lagrange dynamics. The whole book has the approach of analysing a subject from different viewpoints and an ethos of relating kinematics with dynamics.

Exercises are provided at the conclusion of each chapter and the publisher says that the author will provide a detailed solutions manual and Powerpoint slides as ancillaries to this book, but no contact details are provided to facilitate this.

I cannot see the book as a basic course book, even at postgraduate level, but as a help to get from one viewpoint to another. It is a fine reference book.

Eur Ing M. A. Stanberry MRAeS

Hybrid Anistropic Materials for Structural Aviation Parts

Y. Golfman

CRC Press, Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL, 33487-2742, USA. 2011. 323pp. Illustrated. £89, ISBN 978-1-4398-3680-4.

The publishers' blurb informs the prospective buyer that this book contains cutting edge information obtained from authentic and highly regarded sources. Its purpose is to provide key analysis and application examples, to help the reader establish a solid understanding of anisotropic properties, theory of laminates and basic fabrication technologies.

As one might expect the mathematical content is extensive and of a highly specialised nature, but not to the extent that those lacking mathematical skills should be discouraged.

Chapter 1, 'Nanocomposite Automation Process', begins with an overview of the role played by ceramic matrix composites as used in space programmes and advanced aircraft projects eg, the F-35 programme. Under the heading: Fractographic Model Predictions, the point is made that large aviation and marine components, fabricated from fibre composites, have significantly lower strengths than do laboratory specimens. A scale effects equation is offered as a partial solution to this problem. Numerous other equations which relate directly to the design and stressing of SiC/SiC turbine blades, for example, are also given. Other sections include: fibre draw automatic control, spray deposition of aerogels, thermal barrier coatings and tank technologies, the latter pertaining to the Space Shuttle.

Chapter 2, 'Impregnation Process' (singular) actually covers several different processes (plural) in fine detail. Topics include: the automation of prepreg impregnation, theoretical investigation, dry braided impregnation with examples and practical results. Molding and pultrusion processes are also described.

Chapter 3, 'Strength Criteria and Dynamic Stability' is as one might expect a largely mathematical treatise. The first sub-heading reads: Develop (singular) a validated design and life prediction methodology for polymeric matrix composites. This is followed by sections on nonlinear composites, orthotropic models, strength criteria and the theory for anisotropic materials. The detailed comparative analysis of stresses in a rotating disk, over a wide range of speeds is extensive and of particular interest.

Chapter 4, 'Interlaminar Shear Stress Analysis' comprises three highly mathematical sections. Section 4.1 deals exclusively with carbon fibre-epoxy honeycomb sandwich structures, the script being inspired by the need to explain: 'The 2001 American Airline Flight 587 Airbus

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