and aeroacoustics but the main focus is on incompressible flow without heat transfer.

Chapter 7 is closer to what would be expected to find in a vehicle aerodynamics book, including a good number of examples showing how the vehicle shape and aerodynamic add-on affect the aerodynamic performance.

Katz's book will make a prime-choice textbook for an undergraduate Automotive Engineering course, as fluid-related modules in various academic years can cover the topics presented in various chapters of the book. However, the title can be misleading as, while the book covers the fundamental principles of vehicle aerodynamics, it only includes a limited number of applications.

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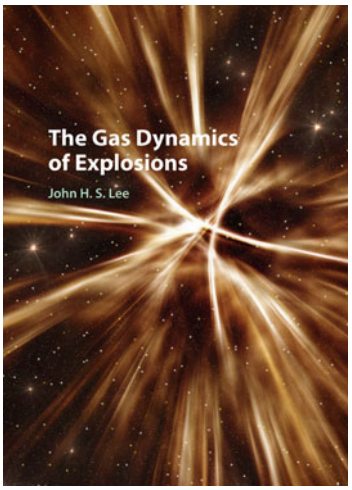

The Gas Dynamics of Explosions

J. H. S. Lee

Cambridge University Press, University Printing House, Shaftesbury Road, Cambridge, CB2 8BS, UK. 2016. 205pp. Illustrated. £89.99. ISBN 978-1-107-10630-7.

The understanding and modelling of explosions has wide-reaching applications from the desired (quarrying and mining), the hazardous (industrial accidents) and the criminal (terrorism). The study of such events is a strongly interdisciplinary area with diverse inputs including those from chemistry, physics, mathematics, mechanical and civil engineering all supported by theory, experiment and numerical modelling. There are several introductory texts in this area but probably the classic by Kinney and Graham, *Explosive Shocks in Air* (Berlin: Spinger-Verlag. 1985 – Second edition) is where

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many of today's scientists and engineers started.

The author of this text is based in McGill University which is amongst the foremost in Canada and well established as a centre for energetic materials research. The author, as stated in the introduction, has taught there for many years. This book is a recompilation of one of his courses and so covers some audience-tested material. The book itself is relatively short, 194 pages, and can be read through in a couple of hours. The text is clear, the meanings precise and the pace is relatively fast.

The underlying question with all technical books is: 'Who is this text aimed at?'. A quick glance at the contents will reveal an equation-heavy exegesis, which, for many will be off-putting. Similarly, the equation of state used for the gas through which the blast wave moves is the ideal gas equation. Both of these facts may seem to limit the book's utility.

If, however, we look with greater attention, the text covers the fundamental gas dynamics in depth and gives fairly complete derivations of equations: this is not a book where space and effort is saved by the familiar phrase 'it can be easily shown that'. Many of the derivations are given for 0D to 3D forms. This allows comparison between the complexity of derivation and the inclusion of many graphs allows easy comparison of the results of the added complexity. This is a key strength of this text.

Overall, I would recommend this book to those who want to have a strong, mathematically analytical basis of this field. I would also recommend it to those who are writing their own codes and would like a precise mathematical baseline model to compare their output with.

The weaknesses of this book result from the nature of the focus. Firstly, there is only one concrete and brief mention of experimental data albeit from an early nuclear test. Secondly at some points, but particularly in Chapter 3, where three theories of the effect of a constriction in a tube on gas dynamics are presented, the author resigns from discussing the 'how and why' and the bases of the theories in favour of showing the convergence of the results.

If asked to recommend a text to a novice in this field who wanted a fully rounded text covering theory, application and modelling, I would probably not suggest this book. If, however, I were asked to suggest a volume that would allow a deeper understanding of the mathematical base of explosion, then this book would be on that list.

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