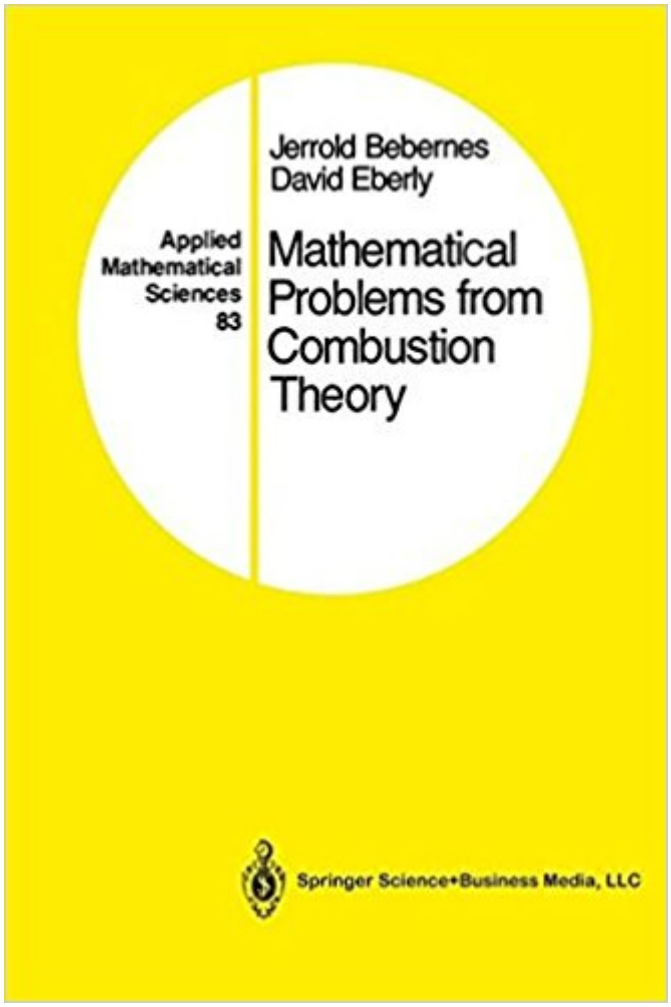
# Mathematical Problems From Combustion Theory (Applied Mathematical Sciences) (v. 83)



## Synopsis

This monograph evolved over the past five years. It had its origin as a set of lecture notes prepared for the Ninth Summer School of Mathematical Physics held at Ravello, Italy, in 1984 and was further refined in seminars and lectures given primarily at the University of Colorado. The material presented is the product of a single mathematical question raised by Dave Kassoy over ten years ago. This question and its partial resolution led to a successful, exciting, almost unique interdisciplinary colÃ Â- laborative scientific effort. The mathematical models described are often times deceptively simple in appearance. But they exhibit a mathematical richness and beauty that belies that simplicity and affirms their physical significance. The matheÃ Â- matical tools required to resolve the various problems raised are diverse, and no systematic attempt is made to give the necessary mathematical background. The unifying theme of the monograph is the set of models themselves. This monograph would never have come to fruition without the enthuÃ Â- siasm and drive of Dave Eberly-a former student, now collaborator and coauthor-and without several significant breakthroughs in our understandÃ Â- ing of the phenomena of blowup or thermal runaway which certain models discussed possess. A collaborator and former student who has made significant contribuÃ Â- tions throughout is Alberto Bressan. There are many other collaboratorsÃ Â- William Troy, Watson Fulks, Andrew Lacey, Klaus Schmitt-and former students-Paul Talaga and Richard Ely-who must be acknowledged and thanked.

## Book Information

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## Customer Reviews

"The authors display a remarkable virtuosity in methods of analysis of nonlinear PDEs, both modern and classical…" -- MATHEMATICAL REVIEWS

If the now famous conjecture of Stephen Hawking's publisher, "Every equation halves a books sales..." is true, then in the limit the sales of this book will approach a very small value. Its sales rank of almost 2 million, at the time of this review, would seem to support that conjecture.This is, perhaps, unfortunate as this monograph provides excellent coverage of an, albeit, specialized topic. There is an unexpected elegance in the models presented, although other than the models themselves there is no common mathematical "cement". The book is mathematically dense and rigorous, using definitions, theorems, proofs, and lemmas extensively. The level of mathematical maturity to get the most from this book would include: advanced calculus, differential equations, and functional analysis. Chapter 3 on the Rapid Ignition Model is, surprisingly, interesting.

This book is a must for any research assistant working in combution theory. I use it every day as a reference and I have not found a better book for ease of use when trying to sort out complex equations. Also, because of the difficulty finding books on combustion theory and the mathmatical models behind those theories, this is an easy find for such a subject. The author presents all his information in an easy to use format that allows the reader to fully understand the context of all his experiments.

Mathematical Sciences, Vol. 171) Computational Homology (Applied Mathematical Sciences) Topological Methods in Hydrodynamics (Applied Mathematical Sciences) Principles of Mathematical Analysis (International Series in Pure and Applied Mathematics) (International Series in Pure & Applied Mathematics) Recursion Theory, Godel's Theorems, Set Theory, Model Theory (Mathematical Logic: A Course With Exercises, Part II) Simple Mathematical Models of Gene Regulatory Dynamics (Lecture Notes on Mathematical Modelling in the Life Sciences) How trace element selenium affects men's health: Discover how selenium can affect: prostate problems, eczema problems, asthma breathing, and 9 other health problems Number Theory III: Diophantine Geometry (Encyclopaedia of Mathematical Sciences) (v. 3) The Mathematical Theory of Black Holes (Oxford Classic Texts in the Physical Sciences) Mathematical Optimization and Economic Theory (Classics in Applied Mathematics) The Mathematical Theory of Finite Element Methods (Texts in Applied Mathematics)