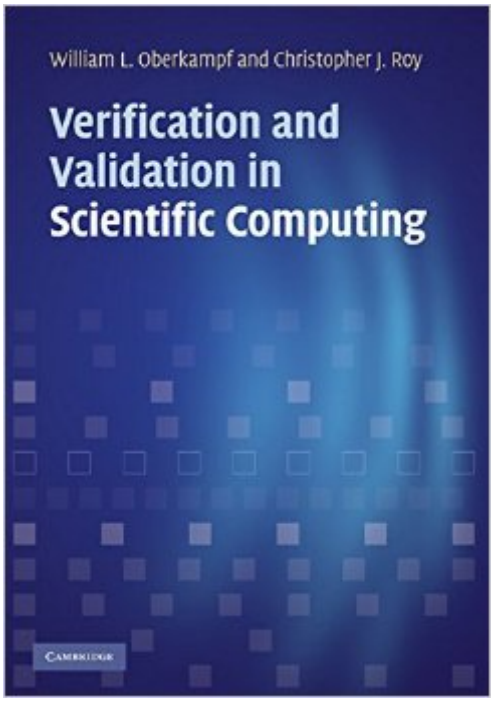
Verification And Validation In Scientific Computing



Synopsis

Advances in scientific computing have made modelling and simulation an important part of the decision-making process in engineering, science, and public policy. This book provides a comprehensive and systematic development of the basic concepts, principles, and procedures for verification and validation of models and simulations. The emphasis is placed on models that are described by partial differential and integral equations and the simulations that result from their numerical solution. The methods described can be applied to a wide range of technical fields, from the physical sciences, engineering and technology and industry, through to environmental regulations and safety, product and plant safety, financial investing, and governmental regulations. This book will be genuinely welcomed by researchers, practitioners, and decision makers in a broad range of fields, who seek to improve the credibility and reliability of simulation results. It will also be appropriate either for university courses or for independent study.

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Customer Reviews

This book is an excellent resource for anyone dealing with concepts of verification and validation. This was an important part of my thesis work, and this reference was invaluable in providing a much-needed comprehensive overview of the verification and validation literature. Both Oberkampf and Roy have done much pioneering in the field of V&V, so the reader is in good/capable hands. The book covers some fundamental V&V concepts, then moves into code verification and software quality assurance (Part II) and solution verification (Part III). It then covers model validation (Part IV), and covers issues in implementation, planning, and management and use of V&V in these activities

(Part V). Part V is perhaps the most unique part of the book, but the coverage in all parts of the book is thorough.This, along with Roache's "Verification and Validation in Computational Science and Engineering" (1998), proved to be an excellent survey of the field. (Much less helpful was the Salari and Knupp's "Verification of Computer Codes" (2002)). Coleman's "Experimentation, Validation, and Uncertainty Analysis for Engineers" (2009) has a more heavily experimental flavor, but is another great resource in this field.

Nice book for this subject from the experts in the field.

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