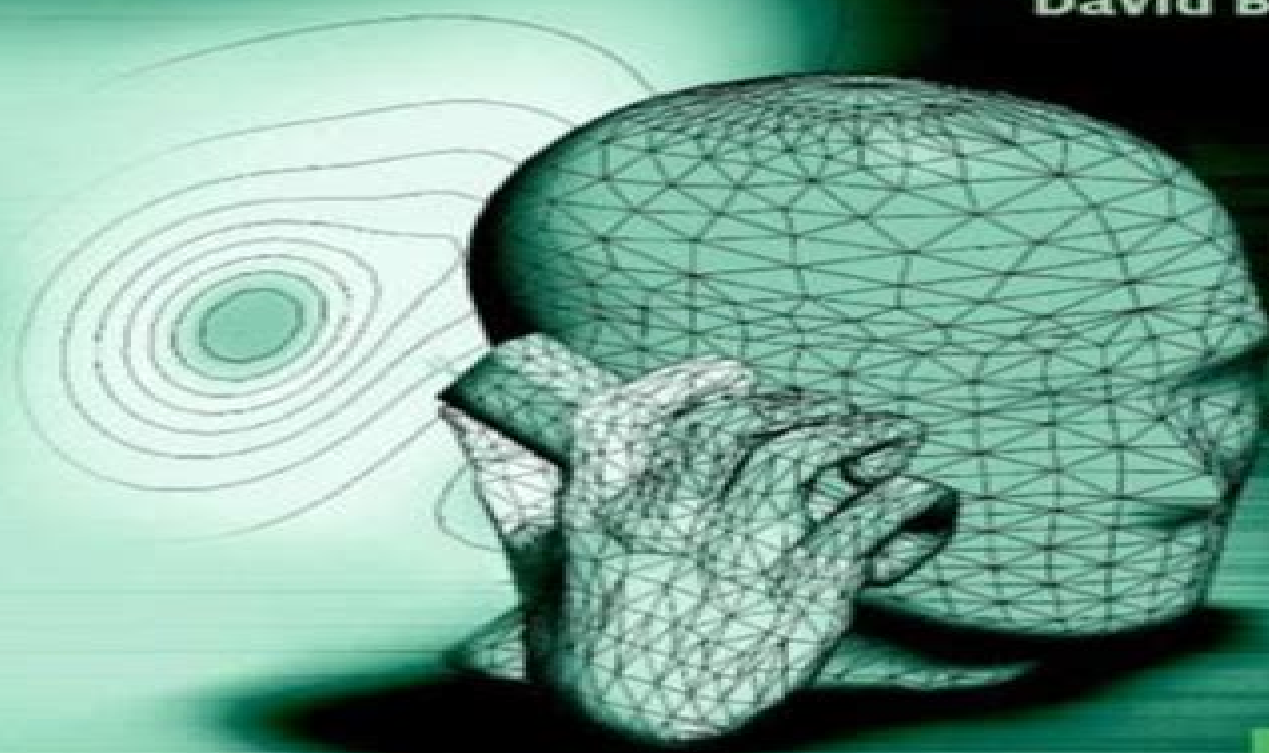


Computational Electromagnetics *for RF and* Microwave Engineering

David B. Davidson



CAMBRIDGE

Computational Electromagnetics For Rf And Microwave Engineering

Mei Song Tong, Xiao Yu Li



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for RF and Microwave Engineering David B. Davidson, 2005-02-24 The numerical approximation of Maxwell's equations Computational Electromagnetics CEM has emerged as a crucial enabling technology for radio frequency microwave and wireless engineering The three most popular full wave methods the Finite Difference Time Domain Method the Method of Moments and the Finite Element Method are introduced in this book by way of one or two dimensional problems Commercial or public domain codes implementing these methods are then applied to complex real world engineering problems and a careful analysis of the reliability of the results obtained is performed along with a discussion of the many pitfalls which can result in inaccurate and misleading solutions The book will empower readers to become discerning users of CEM software with an understanding of the underlying methods and confidence in the results obtained It also introduces readers to the art of code development Aimed at senior undergraduate graduate students taking CEM courses and practising engineers in the industry **Computational Electromagnetics for RF and Microwave Engineering** David B. Davidson, 2005

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application topics for microwave circuits and high frequency electromagnetic EM fields by using advanced design system ADS and high frequency structure simulator HFSS as simulation platforms In particular it contains the latest multidisciplinary co simulation guidance on the design of relevant components and devices Currently the circuit field design and performance analysis and optimization strongly rely on various kinds of robust electronic design automation EDA software RF microwave engineers must grasp two or more types of related simulation design software ADS by Keysight and HFSS by Ansys are the representative for circuit simulations and for field and structural simulations of microwave devices respectively At present these two types of software are widely used in enterprises universities and research institutions The main purpose of this book is to enable readers who are interested in microwave engineering and applied electromagnetics to master the applications of these two tools It also helps readers expand their knowledge boundaries behind those types of software and deepen their understanding of developing interdisciplinary technologies by co simulations The book is divided into three parts The first part introduces the two latest versions of ADS and HFSS and helps readers better understand the basic principles and latest functions better It also advises how to choose appropriate simulation tools for different problems The second part mainly describes co simulations for high frequency EM fields microwave circuits antenna designs EM compatibility EMC and thermal and structural analyses It provides guides and advices on performing co simulations by ADS and HFSS incorporated with other types of software respectively The last part narrates the automation interfaces and script programming methods for co simulations It primarily deals with the Advanced Extension Language AEL Python Data Link PDL and MATLAB interface in ADS For HFSS it discusses VBScript IronPython scripting and Application Programming Interface APIs based on MATLAB Each topic contains practical examples to help readers understand so that they can gain a solid knowledge and skills regarding automated interfaces and scripting methods based on these kinds of software Concisely written in combination with practical examples this book is very suitable as a textbook in introductory courses on microwave circuit and EM simulations and also as a supplementary textbook in many courses on electronics microwave engineering communication engineering and related fields As well it can serve as a reference book for microwave engineers and researchers

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book for engineering students as well as for professionals in the field **Electromagnetic Boundary Problems** Edward F. Kuester, David C. Chang, 2015-10-28 Electromagnetic Boundary Problems introduces the formulation and solution of Maxwell's equations describing electromagnetism Based on a one semester graduate level course taught by the authors the text covers material parameters equivalence principles field and source stream potentials and uniqueness as well as Provides analytical solutions

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