

1. Record Nr.	UNINA9910872185203321
Autore	Tong Mei Song
Titolo	Co-simulations of Microwave Circuits and High-Frequency Electromagnetic Fields // by Mei Song Tong, Xiao Yu Li
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9983-07-X
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (461 pages)
Altri autori (Persone)	LiXiao Yu
Disciplina	621.38132
Soggetti	Telecommunication Optoelectronic devices Electrodynamics Electronic circuits Microwaves, RF Engineering and Optical Communications Optoelectronic Devices Classical Electrodynamics Electronic Circuits and Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction to Co-simulations of Microwave Circuits and High-Frequency Electromagnetic Fields -- Co-simulations of High Frequency Electromagnetic Fields (HFEMFs) -- Co-simulations of Microwave Circuits -- Co-simulations of Antenna -- Co-simulations of Electromagnetic Compatibility -- Co-simulations of Thermal -- Co-simulations of Structural -- Automation Interfaces and Script Programming Methods for Co-simulations.
Sommario/riassunto	This book aims to provide many advanced 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.

---