1. Record Nr. UNINA9910882896303321

Autore	El-Kareh Badih
Titolo	Silicon Components and Processes Self Study : Unit Processes and Process Integration / / by Badih El-Kareh, Lou N. Hutter
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	3-031-59219-0
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (637 pages)
Disciplina	728.370942
Soggetti	Electronic circuits Electronics Solid state physics Electronic Circuits and Systems Electronics and Microelectronics, Instrumentation Electronic Devices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Contents -- Appendix A: Abbreviations, acronyms -- Appendix B: List of Symbols -- Appendix C: Universal Physical Constants -- Appendix D: Properties of Silicon and Germanium -- Appendix E: Properties of SiO2 and Si3N4 (300 K) -- Appendix F: International System of Units, SI -- Appendix G: The Greek Alphabet -- Appendix H:Conversion Factors -- Appendix I: Periodic Table of the Elements -- Answers to Review Questions -- Solution Manual -- Index.
Sommario/riassunto	This book is one of a series of five volumes forming an integrated, self-study course on silicon device physics, modes of operation, characterization, and fabrication. The series is based on many years of the author’s experience in academic and industrial teaching of semiconductors. The books are suitable for both class-teaching and self-study. The authors have designed the content to enable readers to be introduced gradually to semiconductors, in particular silicon components. The presentation includes many illustrations, practical examples, review questions and problems at the end of each chapter. Answers to review questions and solutions to problems will be provided

		for “self-check”. Complements courses covering silicon device physics, mode of components, characterization, and fabrication; Enables comprehensive, self-study in semiconductors, aimed at practicing engineers or university students; Includes many illustrations, practical examples, review questions and problems at the end of each chapter.

2.	Record Nr.	UNINA9911020268803321
	Autore	Zhu Yu
	Titolo	Multigrid finite element methods for electromagnetic field modeling / / Yu Zhu, Andreas C. Cangellaris
	Pubbl/distr/stampa	Hoboken, N.J., : Wiley-IEEE, c2006
	ISBN	9786610349784 9781280349782 1280349786 9780470362549 0470362545 9780471786382 0471786381 9780471786375 0471786373
	Descrizione fisica	1 online resource (438 p.)
	Collana	IEEE Press series on electromagnetic wave theory
	Altri autori (Persone)	CangellarisAndreas C
	Disciplina	530.141 621.38132
	Soggetti	Electromagnetic fields - Mathematical models Multigrid methods (Numerical analysis)
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Description based upon print version of record.
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	List of Figures. -- List of Tables. -- Preface. -- Acknowledgments. -- 1. Introduction. -- 2. Hierarchical Basis Functions for Triangles and Tetrahedra. -- 3. Finite Element Formulations of Electromagnetic BVPs. -- 4. Iterative Methods, Preconditioners, and Multigrid. -- 5. Nested Multigrid Preconditioner. -- 6. Nested Multigrid Vector and Scaler

Potential Preconditioner. -- 7. Hierarchical Multilevel and Hybrid Potential Preconditioners. -- 8. Krylov-Subspace Based Eigenvalue Analysis. -- 9. Two-Dimensional Eigenvalue Analysis of Waveguides. -- 10. Three-Dimensional Eigenvalue Analysis of Resonators. -- 11. Model Order Reduction of Electromagnetic Systems. -- 12. Finite Element Analysis of Periodic Structures. -- Appendix A: Identities and Theorems from Vector Calculus. -- Index.

Sommario/riassunto

This is the first comprehensive monograph that features state-of-the-art multigrid methods for enhancing the modeling versatility, numerical robustness, and computational efficiency of one of the most popular classes of numerical electromagnetic field modeling methods: the method of finite elements. The focus of the publication is the development of robust preconditioners for the iterative solution of electromagnetic field boundary value problems (BVPs) discretized by means of finite methods. Specifically, the authors set forth their own successful attempts to utilize concepts from multigrid and multilevel methods for the effective preconditioning of matrices resulting from the approximation of electromagnetic BVPs using finite methods. Following the authors' careful explanations and step-by-step instruction, readers can duplicate the authors' results and take advantage of today's state-of-the-art multigrid/multilevel preconditioners for finite element-based iterative electromagnetic field solvers. Among the highlights of coverage are: * Application of multigrid, multilevel, and hybrid multigrid/multilevel preconditioners to electromagnetic scattering and radiation problems * Broadband, robust numerical modeling of passive microwave components and circuits * Robust, finite element-based modal analysis of electromagnetic waveguides and cavities * Application of Krylov subspace-based methodologies for reduced-order macromodeling of electromagnetic devices and systems * Finite element modeling of electromagnetic waves in periodic structures The authors provide more than thirty detailed algorithms alongside pseudo-codes to assist readers with practical computer implementation. In addition, each chapter includes an applications section with helpful numerical examples that validate the authors' methodologies and demonstrate their computational efficiency and robustness. This groundbreaking book, with its coverage of an exciting new enabling computer-aided design technology, is an essential reference for computer programmers, designers, and engineers, as well as graduate students in engineering and applied physics.