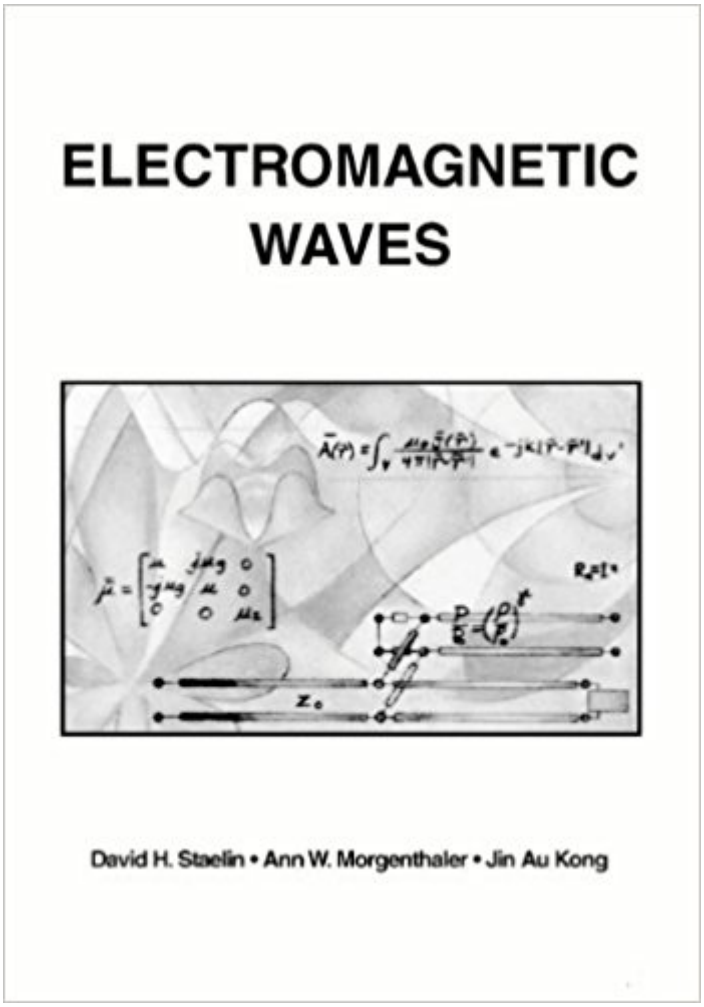
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Electromagnetic Waves



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Synopsis

This introduction to electromagnetic waves emphasizes concepts, examples, and problem-solving techniques having wide applicability, and relies only on basic physics and mathematics Ã¢â ¬â • rather than electrostatics, magnetostatics, and quasitatics. The focus is on generic problem-solving techniques Ã¢â ¬â • both mathematical and physically-intuitive, and the presentation of basic electromagnetic theorems Ã¢â ¬â • Poynting, energy, uniqueness, and reciprocity Ã¢â ¬â • explained from a physical perspective. Progresses from simple wave propagation in unbounded free space to antenna and resonator design. Presents the fundamental concepts of plane waves, phasors, polarization, energy, power, and force early Ã¢â ¬â • and repeatedly applies them throughout the text to problems with progressively more complex boundary conditions. For students and practicing engineers interested in electromagnetic wave phenomena.

Book Information

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Customer Reviews

This intermediate text emphasizes concepts, examples, and problem-solving techniques having wide applicability, and relies only on basic physics and mathematics -- rather than electrostatics, magnetostatics, and quasistatics. The focus is on generic problem-solving techniques -- both mathematical and physically-intuitive, and the presentation of basic electromagnetic theorems -- Poynting, energy, uniqueness, and reciprocity -- explained from a physical perspective.

As educators, David H. Staelin, Ann W. Morgenthaler, and Jin Au Kong saw a need for a book

presenting electromagnetic theory and applications in a clear, compact, and "user-friendly" manner relying only on basic physics and mathematics. The result is Electromagnetic Waves. This book provides thorough explanations and relevant, modern examples so that students and practicing engineers will find it a useful reference as well as a tool for self-teaching. It emphasizes basic concepts from both a physical and mathematical perspective. Successive chapters move from simple wave propagation in unbounded free space to the complexities of resonator and antenna design, revisiting basic concepts as each new topic is introduced. Electromagnetic Waves also makes connections between electromagnetics and simple equivalent circuit models wherever possible. The book exposes its readers to a considerable array of mathematical tools as well, ranging from orthogonal function expansions to perturbation techniques and duality, but physical intuition and approximate problem-solving techniques are also emphasized.

One of the best E&M books I’ve ever read. Very clear derivations, concise, covers many useful topics.I usually rent book and rarely buy them, but I bought this one!Miles ahead of the intro E&M textbooks. You should have some background of complex exponentials before reading this, but you don’t need to know to much about complex numbers.

A well writ textbook on Electromagnetic waves. Helped me ace the SAT Subject test!

Seriously, this is a great book for the coverage of the subject matter. But you need to know what the heck you’re doing with EM waves. It is not a book for beginners - not even close. I liked it because they get right to the point, talking about the subject matter.They waste no time in the complex math - they assume you can figure that part out on your own. So if you’re linear algebra and partial differential equations skills are weak, you’ll have trouble. Mine were a little weak and it took me a while to plow through the book. Actually, truth be told, they’re much better now that I was forced to go figure that stuff out on my own. Side benefit I guess.My only regret is that I wish they had a few more examples, or at least that the examples were more - normal, maybe? Exotic example problems are interesting, but sometimes you just want to see a basic example so that you can get your homework done.

Prof Staelin was a wonderful instructor and this text is a tribute to his skills. It is one of the most readable and comprehensive EMT texts available and reads almost like a novel. Its target audience is that of the engineer and it delves into areas that many an engineer will spend time in. The

development of waveguides and transmission lines is brilliant and simply stated and it allows the engineer to see what the many applications may be. As EMT has somewhat fallen behind this text I believe will remain a valuable contribution to the field.

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