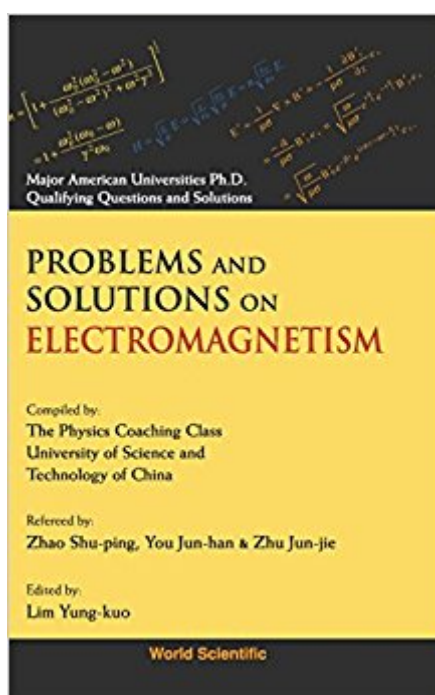


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# PROBLEMS AND SOLUTIONS ON ELECTROMAGNETISM (Major American Universities Ph.D. Qualifying Questions And S)



## Synopsis

The material for these volumes has been selected from the past twenty years' examination questions for graduate students at University of California at Berkeley, Columbia University, the University of Chicago, MIT, State University of New York at Buffalo, Princeton University and University of Wisconsin. This volume comprises 440 problems and is divided into five parts: (I) Electrostatics; (II) Magnetostatic Field and Quasi-Stationary Electromagnetic Field; (III) Circuit Analysis; (IV) Electromagnetic Waves; (V) Relativistic Particle-Field Interactions.

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## Customer Reviews

This book is an invaluable resource, providing a huge selection of problems to work on and solutions that can help you if you get stuck. It also gives a very good overview of the types of problems that are likely to appear on qualifying exams (though the exams from your own school are more useful for that). These books are about preparing for qualifiers, not teaching the material. It is assumed that the reader already knows what they're doing and just wants to work through problems, so of course there are scant explanations. I found it useful to work through the problems and make notes of relevant equations that I had forgotten. My only real complaint is that the index is utterly useless, although that's a minor drawback.

I purchased this book to assist me in my graduate courses using Jackson's text. Many of the homework assignments were actually problems taken from qualifying exams at different universities,

so this book was very helpful for those problems. As for the Jackson problems, one will be lucky to find any help at all (too bad). I strongly recommend this to anyone who is pursuing a graduate physics degree, not only because it is an excellent handbook for the qualifying exam and homework assignments, but also because it is a very well organized source of information on the subject of Electromagnetism. In addition to this text, I have also purchased the volumes on Quantum Mechanics and Mechanics. Both are as useful as this text, though I have to say that all of them lack a comprehensive index. There are also some errors, but they are few and far between. Also, these books do not provide background on any equations used. They may say something like "With the application of Schrodinger's Equation, this becomes...", yet in the same problem there may have been a step where De Moivre's theorem was applied and the authors have neglected to mention it. I suppose this is useful because if one is using the book as a study guide, it would not be instructive unless one was actually working out the problem, so it is up to the reader to uncover the little details.

A nice collection of problems. Some of the solutions are formal, not much intuition is provided, so the book can help with the math, but not with physics learning! Out of 10 problems I picked (while teaching a course based on D. Griffiths, 2nd half) two had major mistakes: 2092 does a separation-of-variables solution to a current-conduction problem, which has zero net current, because the most important term is missing (constant times  $z$ , which corresponds to zero separation constant) - total screw-up, which tells me that nobody bothered thinking what the result actually means. 2098 messes up part b: the Poynting vector direction depends on the rate of change of the electric field in the capacitor (displacement current), simply setting charges and currents to one situation doesn't cut it, there are four phases to consider, depending on which power will flow in or out of the capacitor, and up/down the coax. There are also typos that will make the novice go crazy. Not many of those, but they affected two of the ten problems (one in a serious way). You have to be a (really?) good student, or a rock-solid professional to benefit from every problem. On a positive note: I learned from two of the ten problems about things that didn't come up (or weren't presented well enough) in the Griffiths examples/problems.

The entire series is my savior. Each volume covers the material needed in the junior/senior level of physics. It truly has an immense selection of problems. I found that nearly all of my homework/exams were either exactly the same or merely a slight variation from one contained. I also have yet to find a single error, not even a sign error. One important thing is that it does need to be a supplement, as

formulas are sometimes used without explicit reference to why. In general the reasons need to be found in an assigned text. My only gripe (and it is minor) is with the index...the index does not, in general, lead one to a relevant problem. For example, uses of Biot/Savart to solve this problem or that... The reason this is not a serious problem is that each topic has so many variations on the method/technique that it is simple enough to find at least a couple that are completely relevant. (given you know which section to look in)

This is the most comprehensive book on the subject!! if you want to dig into E&M further, check out his book on Introduction to Classical Electrodynamics by Y. K. Lim 9971978857 ? It's very helpful!! With them, you should have no problem passing the Ph.D. Qual! Good luck!

This book is only useful if you attend one of the universities where the questions were adapted from. The problems cover only basic electromagnetics, it does not cover advanced electromagnetic problems such as scattering (physical optics, geometric optics/geometric theory of diffraction,...), mode-matching, and integral equations. This book only helped me to review statics. Do not buy this book unless you want a basic refresher on electromagnetics.

If you work and understand every problem in this book, you will pass your Electrodynamics Ph.D. qualifying exams! That's was my experience!

As a physicist, I've read several physics books published by professors from different countries. It's the first time and it will be the last time I ever buy books published by these Chinese authors; they appear to be quite irresponsible. I found a few "Typo Errors ??" and requested clarification from the authors and publisher. So far they never reply. It also appears that the authors do not quite understand the subjects well enough to come up with a sound solution to the problems posed in the book. They seem to memorize formulas in physics rather than having a deep understanding like Dr. Richard Feynman or Dr. David Griffiths etc. **DON'T BUY THIS BOOK UNLESS YOU HAVE SOME MONEY TO WASTE.**

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