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Titolo	Exercises in Electricity and Magnetism : 100 Examples and 400 Exercises // by Teruo Matsushita
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Sommario/riassunto	This book covers a great variety of problems on electricity and magnetism described in the textbook, "Electricity and Magnetism", in which superconductors are classified as one kind of magnetic materials. These problems will be helpful for a deeper understanding of the E-B analogy through a comparison between static electric and magnetic phenomena. Additionally, the usefulness of the vector potential is widely introduced. For example, the vector potential is

directly used to determine the induced electromotive force. The author provides various exercises that are not covered in the textbook. The Poynting vector is useful for understanding the energy flow into capacitors or transmission lines during a charging process or into resistors during a dissipation process. A comparison between normal conducting and superconducting transmission lines shows a clear difference in the energy flow, although the final stored magnetic energy is the same. The electromagnetic potential of electromagnetic transverse electric (TE) and transverse magnetic (TM) waves in a waveguide also presents an interesting difference: The electric potential is zero in one case and non-zero in the other case. The reason for such a difference is explored. The relationship between the electric charge and electric current induced on the conductor surface is investigated for an electromagnetic wave in a waveguide or for that reflected on a conductor surface. This exercise book can be used together with the textbook 'Electricity and Magnetism' by the same author.
