Lederer / Skupin

Lectures on Theoretical Optics

This textbook covers the fundamentals of modern optics which are necessary for understanding optical phenomena in modern science and technology. Important theoretical concepts, from classical electromagnetics to nonlinear optics, are presented in a self-contained way. Each chapter comes with a number of problems in order to test and deepen the understanding of the respective material. For a more practical approach, numerous numerical experiments are provided (requires Python), which allow the reader to visualize example problems and get some hands-on experience in optical modeling. In addition to fundamental knowledge in theoretical optics, the book gives outlooks on more advanced topics of current research interest, i.e., metamaterials, plasmonics, ultrashort high-intensity pulse propagation, and laser-matter interaction.

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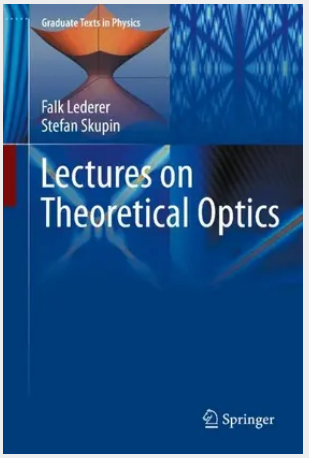

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