



Antenna Analysis and Design Using FEKO Electromagnetic Simulation Software (ACES Series on Computational Electromagnetics and Engineering)

By Atef Z. Elsherbeni, Payam Nayeri, C. J. Reddy

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The objective of this book is to introduce students and interested design-engineers to antenna design and analysis using the popular commercial electromagnetic software FEKO. This book is primarily intended for students working in the field of antenna analysis and design; however the wealth of hands-on design examples presented in this book?along with simulation details?also makes it a valuable reference for practicing engineers. The requirement for the readers of this book is to be familiar with the basics of antenna theory; however electrical engineering students taking an introductory course in antenna engineering can also benefit from this book as a supplementary text.

The key strengths of this book are as follows

- * First, the basics of antenna simulation will be presented in a detailed, understandable, and easy-to-follow procedure through study of the simplest types of radiators, i.e. dipole and loop antennas, in chapters 2 and 3. This will build the fundamental knowledge a student would need in order to utilize antenna simulation software in general.
- * Second, comparison between theoretical analysis and full-wave simulation results of FEKO are given for a variety of antenna types, which will aid the readers with a better understanding of the theory, approximations and limitations in the theoretical analysis, and solution accuracy.
- * Third, and of paramount importance, is the visualization of the antenna current distribution, radiation patterns, and other radiation characteristics that are made available through full-wave simulations using FEKO. A proper analysis of the radiation characteristics through these visualizations serves as a powerful educational tool to fully understand the radiation behavior of antennas.

The commercial electromagnetic software FEKO is selected for the simulations due to its numerous advantages and popularity. In particular, this software

provides multiple solvers that can be chosen for a fast and efficient analysis depending on the type of antenna. Moreover, FEKO provides free classroom licenses to universities which can be used to simulate most of the antenna configurations presented in this book.

FEKO simulation files are available to instructors who adopt the book for their course or professionals who have purchased the book. Please contact The IET for more information.

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Editorial Review

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C. J. Reddy is President of EM Software & Systems.

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