Computational Methods for Electric Power Systems, Third Edition (Electric Power Engineering Series)

By Mariesa L. Crow

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Computational Methods for Electric Power Systems introduces computational methods that form the basis of many analytical studies in power systems. The book provides the background for a number of widely used algorithms that underlie several commercial software packages, linking concepts to power system applications. By understanding the theory behind many of the algorithms, the reader can make better use of the software and make more informed decisions (e.g., choice of integration method and step size in simulation packages).

This **Third Edition** contains new material on preconditioners for linear iterative methods, Broyden's method, and Jacobian-free Newton–Krylov methods. It includes additional problems and examples, as well as updated examples on sparse lower-upper (LU) factorization. It also adds coverage of the eigensystem realization algorithm and the double-shift method for computing complex eigenvalues.

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Editorial Review

Review

"This book analyzes the most relevant mathematical tools for power system analysis. It is well written, well balanced, and treats the mathematical issues with a good degree of rigor and clarity. The numerical examples are illustrative and useful. ... I'm considering to adopt this book for my course, since it condenses in a unique reference the mathematical backbone of the most important power system analysis tools."
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About the Author

Mariesa L. Crow is a professor of electrical engineering at the Missouri University of Science and Technology, Rolla, USA. Dr. Crow is director of the Energy Research and Development Center. Her areas of research include computer-aided analysis of power systems; dynamics and security analysis; voltage stability; computational algorithms for analyzing stressed, non-linear, non-continuous systems; power-electronic applications in bulk power systems (FACTS); and parameter estimation.

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