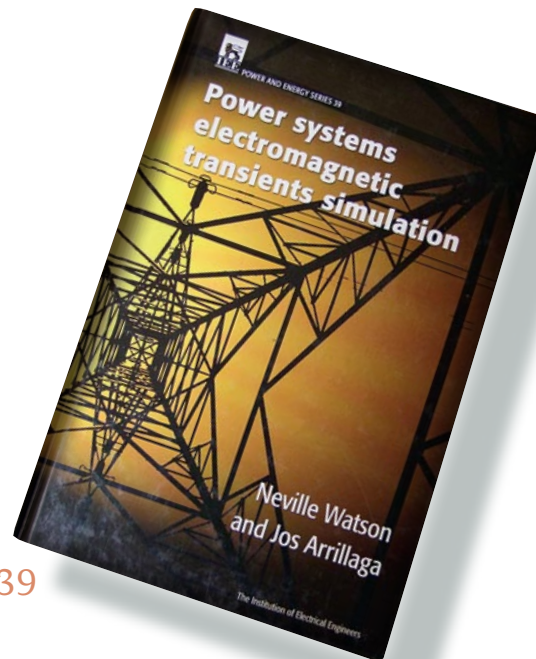


# Power systems electromagnetic transient simulation



IEE Power and Energy Series 39

The changing utility environment characterized with system congestion, increased sensitivity of industrial loads to short circuit faults and other abnormal system conditions leads to the requirements for fast fault clearing and stable behavior of protection relays during wide area system disturbances. Advanced protection functions based on the monitoring of the transient voltage and current signals at the relay location need proper simulation tools for the calculation of their settings and the testing of their performance for a specific application. That is why proper understanding of electromagnetic transient simulation of the behavior of the electric power system is essential for the improvement of the stability of the system.

The authors of the book – N. Watson and J. Amillaga (both from the University of Canterbury, New Zealand) understand the growing complexity of the topic and its importance in the design of electric power systems, as well as the need for a consistent treatment of the computer analysis of electromagnetic transient programs.

This is delivered as a hard cover book of more than four hundred pages. The material is divided in thirteen chapters, followed by eight appendices.

The authors start with definitions, objectives and background, followed by discussions on the analysis of continuous and discrete systems, as well as state variable analysis. Chapters covering the modeling of transmission lines, cables, transformers, rotating machines and power electronics provide a lot of information that can help the reader not only understand the concepts, but also the data that needs to be available in order to model the power system.

Modeling of protection and control systems adds another layer to the simulation of the behavior of the electric power system during abnormal conditions that allows the transition from one state to another based on the operation of the different secondary devices. The book not only provides a thorough review of concepts and models, but

helps the reader understand them through many examples. MATLAB and FORTRAN code examples are included in the appendices at the end of the book.

This book will be of particular value to practicing protection, automation and control specialists, as well as advanced engineering students or anybody else with interests in engineering or testing of protection and control systems.

Power Systems Electromagnetic  
Transient Simulation  
by Neville Watson and  
Jos Arriaga  
Edition : 1st 2003  
Format: Hardcover, 448pp  
Publisher: The Institution of Electrical  
Engineers (IEE),  
London, United Kingdom  
ISBN: 0852961065  
ISBN-13: 9780852961063  
Pub. Date: November 2002