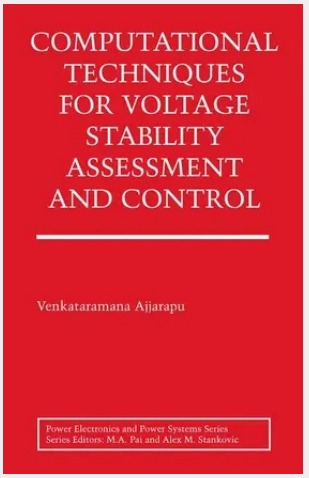
Ajjarapu

Computational Techniques for Voltage Stability Assessment and Control

Presenting the continuation and bifurcation-based approaches to assess power system voltage stability, this self-contained manual first provides basic definitions related to voltage stability based on IEEE/CIGRE voltage stability classification. Then the need for robust numerical techniques that are needed to address various aspects of voltage instability is articulated. It presents a tutorial introduction to the basic concepts in bifurcation theory and continuation methods. These methods lead to robust numerical techniques for voltage stability study. The book also provides details related to continuation power flow. In addition, it provides the approach to trace voltage stability boundary for changing system conditions and proposes a uniformed framework that provides computational approaches for both short-term and long-term voltage stability phenomena.

This book offers a practical survey of continuation- and bifurcation-based approaches for assessing the stability of power system voltage. Beginning with definitions based on IEEE/CIGRE voltage stability classifications, the text demonstrates the need for robust numerical techniques for addressing aspects of voltage instability. The basic concepts of bifurcation theory and continuation methods are presented in tutorial form, along with information on continuation power flow. The text includes access to web based simulation tools which users can use to simulate test systems.



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