Preface

There are many excellent books on power systems that treat power system analysis, and its most important computational problem: the power flow problem. Some of these books also discuss the traditional computational methods for solving the power flow problem, i.e., Newton power flow and Fast Decoupled Load Flow. However, information on newer solution methods is hard to find outside research papers.

This book aims to fill that gap, by offering a self-contained volume that treats both traditional and newer methods. It is meant both for researchers who want to get into the subject of power flow and related problems, and for software developers that work on power system analysis tools.

Part I of the book treats the mathematics and computational methods needed to understand modern power flow methods. Depending on the knowledge and interest of the reader, it can be read in its entirety or used as a reference when reading Part II. Part II treats the application of these computational methods to the power flow problem and related power system analysis problems, and should be considered the meat of this publication.

This book is based on research conducted by the authors at the Delft University of Technology, in collaboration between the Numerical Analysis group of the Delft Institute of Applied Mathematics and the Electrical Power Systems group, both in the faculty Electrical Engineering, Mathematics and Computer Science.

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