BOOK REVIEW

György Fodor: Nodal Analysis of Electrical Networks.
Akadémiai Kiadó, Budapest, 1988. 400 pp..

This book is the exhaustively enlarged and revised version of an original Hungarian work published in 1982. Simultaneously, the book is a new volume in the series "Studies in Electrical and Electronic Engineering", published by Elsevier Science Publishers. The author is professor of the Technical University of Budapest and Head of the Department of Electromagnetic Theory. He is the author of several other textbooks as well. His work entitled "Laplace Transforms in Engineering" was published in English previously.

The English publication of "Nodal Analysis of Electrical Networks" makes the spreading of original ideas and useful methods in a wider circle. The greatest value of the book is the unified treatment of different network classes (which will be discussed later) by the method of nodal analysis. Numerous simple examples included in the text explain the concepts and help the understanding of the algorithms. The reader is assumed to be familiar with the matrix algebra and with the basic concepts and methods of electrical network theory.

The problem of network analysis is usually divided in four different steps, namely

- network modelling of the system,
- formulation of the equations,
- solution of the equations,
- evaluation of the results.

The book deals exclusively with the formulation of the equations, discussed in detail and thoroughly.

Chapter 1 introduces the concepts of pole variables, terminal variables and port variables and presents the basic ideas of nodal analysis. Chapter 2 is devoted to the analysis of linear networks in the frequency domain, and Chapter 3 deals with the analysis of linear networks in the time domain. Chapter 4 formulates the

equations of the nonlinear resistive networks. Chapter 5 describes the analysis of nonlinear and time-varying networks in time domain. Chapter 6 contains the calculation of transfer quantities and sensitivities. Chapter 7 investigates the signal-flow networks, explains the description of the structure of these networks, formulates the network equations in the frequency and time domain, and solves the calculation of the transfer function and sensitivity. Chapter 8 is devoted to the investigation of signal-flow graphs containing components of both discrete and continuous time operation (so-called "mixed networks"). The author presents here the frequency domain and time domain analysis of mixed networks and pays special attention to the systematic treatment of the sampled-data networks. Chapter 9 gives the basic ideas of switched capacitor networks and the formulation of the network equations. The book contains a subject index and a list of notations.

The outlook of the book is nice and the publication is a good professional work. The author gives a comprehensive summary of the nodal analysis of electrical networks. The book is very useful for university and college students, for the members of electrical, electronic and computer departments and for engineers interested in mathematical systems analysis. The reviewer is especially glad to recommend this book to the future readers, because the work is rich in original ideas, and the treatment of the subject is unified and systematic.

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