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Nota di contenuto	UNDERSTANDING SYMMETRICAL COMPONENTS FOR POWER SYSTEM MODELING; Contents; About the Author; Foreword; Preface and Acknowledgments; 1 Symmetrical Components Using Matrix Methods; 1.1 Transformations; 1.2 Characteristic Roots, Eigenvalues, and Eigenvectors; 1.2.1 Definitions; 1.3 Diagonalization of a Matrix; 1.4 Similarity Transformation; 1.5 Decoupling a Three-Phase Symmetrical System; 1.6 Symmetrical Component Transformation; 1.7 Decoupling a Three-Phase Unsymmetrical System; 1.8 Clarke Component Transformation; 1.9 Significance of Selection of Eigenvectors in Symmetrical Components 3.1 Impedance Matrix of Three-Phase Symmetrical Line3.2 Three-Phase Line with Ground Conductors; 3.3 Bundle Conductors; 3.4 Carsons Formula; 3.4.1 Approximations to Carsons Equations; 3.5 Capacitance of Lines; 3.5.1 Capacitance Matrix; 3.6 Cable Constants; 3.6.1 Zero Sequence Impedance of the OH lines and Cables; 3.6.2 Concentric Neutral Underground Cable; 3.6.3 Capacitance of Cables; 3.7 EMTP Models; 3.7.1 Frequency Dependent Model, FD; 3.8 Effect of Harmonics on Line Models; 3.9 Transmission Line Equations with Harmonics; References 4 Sequence Impedances of Rotating Equipment and Static Load4.1

Synchronous Generators; 4.1.1 Positive Sequence Impedance; 4.1.2 Negative Sequence Impedance; 4.1.3 Negative Sequence Capability of Generators; 4.1.4 Zero Sequence Impedance; 4.1.5 Sequence Component Transformation; 4.1.6 Three-Phase Short-Circuit of a Generator; 4.1.7 Parks Transformation; 4.2 Induction Motors; 4.2.1 Equivalent Circuit; 4.2.2 Negative Sequence Impedance; 4.2.3 Harmonic Impedances; 4.2.4 Zero Sequence Impedance; 4.2.5 Terminal Short-Circuit of an Induction Motor; 4.3 Static Loads
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Sommario/riassunto

An essential guide to studying symmetrical component theory This book utilizes symmetrical components for analyzing unbalanced three-phase electrical systems, by applying single-phase analysis tools. The author covers two approaches for studying symmetrical components; the physical approach, avoiding many mathematical matrix algebra equations, and a mathematical approach, using matrix theory. Divided into seven sections, topics include: symmetrical components using matrix methods, fundamental concepts of symmetrical components, symmetrical component s -transmission lines and cables, sequence components of rotating equipment and static load, three-phase models of transformers and conductors, unsymmetrical fault calculations, and some limitations of symmetrical components. In addition, this book: . Provides concise treatment of symmetrical components. Describes major sequence models of power system components. Discusses Electromagnetic Transient Program (EMTP) models. Includes worked examples to illustrate the complexity of calculations, followed by matrix methods of solution which have been adopted for calculations on digital computers.