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4.4.2 Coplanar Waveguides Loaded with Pairs of SRRsReferences; 5 Application of Symmetry Properties to Common-Mode Suppressed Differential Transmission Lines; 5.1 Introduction; 5.2 Symmetry-Based Selective Mode Suppression; 5.3 Common-Mode Suppressed Differential Microstrip Lines; 5.3.1 CSRR- and DS-CSRR-Loaded Differential Microstrip Lines; 5.3.2 ELC- and MLC-Loaded Differential Microstrip Lines; References; 6 Application of Symmetry Properties to Microwave Sensors; 6.1 Introduction; 6.2 Symmetry-Based Sensing; 6.2.1 Coupling-Modulated Resonance
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Sommario/riassunto

This book discusses the analysis, circuit modeling, and applications of transmission lines loaded with electrically small resonators (mostly resonators inspired by metamaterials), focusing on the study of the symmetry-related electromagnetic properties of these loaded lines. It shows that the stopband functionality (resonance) that these lines exhibit can be controlled by the relative orientation between the line and the resonator, which determines their mutual coupling. Such resonance controllability, closely related to symmetry, is essential for the design of several microwave components, such as common-mode suppressed differential lines, novel microwave sensors based on symmetry disruption, and spectral signature radio-frequency barcodes. Other interesting aspects, such as stopband bandwidth enhancement (due to inter-resonator coupling, and related to complex modes) and magnetoelectric coupling between the transmission lines and split-ring resonators, are also included in the book. .