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RADAR HANDBOOK

In general, the subjects are covered in breadth rather than depth. Mathematical derivations and detailed exposition normally characteristic of texts are omitted. Many of the topics discussed could themselves easily have been expanded into books. References are provided with each chapter for those readers desiring additional information. The first chapter serves as a brief introduction to radar. Chapters 2 to 4 describe methods for predicting the range performance of radar, the theoretical aspects of waveform design as based on the Woodward ambiguity function, and the theoretical precision with which radar measurements can be made. Chapters 5 to 14 describe the various parts of a radar system, which include the receivers, displays, transmitters, RF components, antennas, and radomes. Chapter 15, on automatic-detection theory, is concerned with some of the theoretical aspects of signal processing that enter into receiver design as well as waveform design. Radar techniques are described in Chaps. 16 to 23. These include CW and FM-CW radar, MTI, AMTI, pulse-doppler, pulse compression, tracking radar, height-finding radar, and synthetic aperture radar. Weather effects, land and sea clutter, target characteristics, and interference are discussed in Chaps. 24 to 29. Chapters 30 to 39 describe several special applications of radar and miscellaneous topics. Individual Chapters are devoted to civil marine radar, satellite-surveillance radar, radar astronomy, and spaceborne radar. These topics are included not only to describe these important applications but to provide a means for introducing some aspects of radar technology not found elsewhere in the handbook. Chapters on bistatic and multistatic radar and laser radar are also included. A chapter on digital signal processing is provided since this is a subject of increasing importance in the practical implementation of radar. Two chapters discuss subjects that are not strictly radar but are related and are often of interest to many radar engineers. One is on beacons, and the other describes the subject of passive detection, or microwave radiometry.

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