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## SUPPLEMENTARY READING

Listed below are books and papers that provide expanded coverage or alternative treatments of particular topics. Complete citations are given in the References.

### Communication Systems

The following texts present about the same general scope of communication systems as this book: Couch (2007), Proakis and Salehi (2005), Stern and Mahmoud (2004), Haykin (2001) and Gibson (1993). See Kamen and Heck (1997) or Proakis and Salehi (1998) for additional MATLAB material. Graduate level treatments are given by Proakis (2001), Sklar (2001), and Ziemer and Peterson (2000).

Belamy (1991) provides details on digital telephony. Optical systems are discussed by Gagliardi and Karp (1995), Nellist (1992) and Palais (1998).

### Fourier Signal Analysis

Expanded presentations of signal analysis and Fourier methods are contained in Lathi (1998) and Stuart (1966). Two graduate texts dealing entirely with Fourier transforms and applications are Bracewell (1986), which features a pictorial dictionary of transform pairs, and Papoulis (1962), which strikes a nice balance between rigor and lucidity.

Advanced theoretical treatments will be found in Lighthill (1958) and Franks (1969). The article by Slepian (1976) expounds on the concept of bandwidth.

### Probability and Random Signals

Probably the best general reference on probability and random signals is Leon-Garcia (1994). Other texts in order of increasing sophistication are Drake (1967), Beckmann (1967), Peebles (1987*a*), Papoulis (2002), Cooper and McGillem (1986), and Breipohl (1970).

The classic reference papers on noise analysis are Rice (1944) and Rice (1948). Bennett (1956) is an excellent tutorial article.

### CW Modulation and Phase-Lock Loops

Goldman (1948), one of the earliest books on CW modulation, has numerous examples of spectral analysis. More recent texts that include chapters on this subject are Stremmer (1990), Ziemer and Tranter (1995), and Haykin (2001).

Detailed analysis of FM transmission is found in Panter (1965), a valuable reference work. Taub and Schilling (1986) gives clear discussions of FM noise and threshold extension. The original papers on FM by Carson (1922) and Armstrong (1936) remain informative reading.

The theory and applications of phase-locked loops are examined in depth in Brennan (1996), which also includes a discussion of noise in PLLs.

## Sampling and Coded Pulse Modulation

Shenoi (1995) presents sampling and digital signal processing with emphasis for telecommunications. Oppenheim, Schaffer, and Buck (1999) is a classic book that covers sampling and digital signal processing. Ifeachor and Jervis (1993) presents many of the practical aspects of sampling. Other discussions of sampling are in papers by Linden (1959) and Jerri (1977).

Oliver, Pearce, and Shannon (1948) is a landmark article on the philosophy of PCM, while Reeves (1965) recounts the history of his invention. The book by Cattermole (1969) is entirely devoted to PCM. Jayant and Noll (1984) covers the full range of digital encoding methods for analog signals.

## Digital Communication and Transmission Methods

In addition to what has already been said, the following references deal with specific aspects of digital transmission: Fehr (1981) on microwave radio; Mitola (2000) and Kennington (2005) on software radio; Ippolito, (2008), Spilker (1977) and Sklar (2001) on satellite systems; Dixon (1994) and Peterson, Ziemer, and Borth (1995), and Glisic and Vucetic (1997) on spread spectrum; Andrews, Ghosh and Muhamed (2007), Bahai, and Saltzberg, (1999) and Prasad (2004) for OFDM; Necoogar, F., (2006) for Ultra-Wideband communications; Ungerboeck (1982) Biglieri, Divsalar, McLane and Simon (1991) and Schlegel (1997) on trellis coded modulation systems; Lewart (1998) on modems.

Computer networks are covered by Tannenbaum (1989), Stallings (2000) and Peterson and Davie (2000).

Of the many papers that could be mentioned here, the following papers have special merit: Arthurs and Dym (1962), on optimum detection; Lender (1963) on duobinary signaling; Lucky (1965) and Qureshi, (1985) on adaptive equalization; Gronemeyer and McBride (1970) on MSK and OQPSK; Murota and Hirade (1981) on GMSK and Oetting (1979) on digital radio.

## Wireless Phone and Network Systems

The Economist, 2004, presents a general overview of WiFi. More detailed coverage for WiMax are: Shepard, (2006), and Andrews, Ghosh and Muhamed (2007). Karim, and Sarraf, (2002) is a good primer on wireless phones, specifically the WCDMA and CDMA 2000 technologies and Ames and Gabor (2000) present the evolution of 3G wireless standards. In addition to Andrews, Ghosh and Muhamed (2007), Rappaport (2002) and Schwartz (2005) deal with the principles and practices of wireless communications. A classic book on radio propagation is Jordan and Balmain (1968).

## Coding and Information Theory

Abramson (1963), Hamming (1986), and Wells (1999) provide very readable introductions to both coding and information theory. Also see Chaps. 4–6 of Wilson (1996) and Chaps. 4, 7, and 8 of LaFrance (1990).

Mathematically advanced treatments are given by Gallager (1968) and McElice (1977).

Texts devoted to error-control coding and applications are Wiggert (1978), Lin (1970), and Adámek (1991) at the undergraduate level, and Berlekamp (1968), Peterson and Weldon (1972), Lin and Costello (1983), Sweeney (1991), and Wicker (1995) at the graduate level.

Introductions to information theory are given by Blahut (1987) and Cover and Thomas (1991). The classic papers on the subject are Nyquist (1924, 1928*a*), Hartley (1928), and Shannon (1948, 1949). Especially recommended is Shannon (1949), which contained the first exposition of sampling theory applied to communication. A fascinating nontechnical book on information theory by Pierce (1961) discusses implications to art, literature, music, and psychology.

The book by Simon Singh (1999) describes an interesting history of encryption. Technical information on encryption is covered in the following sources: National Institute of Standards and Technology (NIST) FIPS no. 197 (2001) for the Advanced Encryption Standard (AES) and FIPS no. 46 (1993) for the Data Encryption Standard (DES). Diffie and Hellman (1976 and 1979), and Rivest and Adleman (1978) cover private and public key systems. Sklar (2001) also has a chapter on encryption.

## Detection Theory

The concise monograph by Selin (1965) outlines the concepts and principles of detection theory. Applications to optimum receivers for analog and digital communication are developed in Sakrison (1968), Van Trees (1968), and Wozencraft and Jacobs (1965). The latter includes a clear and definitive presentation of vector models. Viterbi (1966) emphasizes phase-coherent detection. Tutorial introductions to matched filters are given in the papers by Turin (1960, 1976).

## Electrical Noise

There are relatively few texts devoted to electrical noise. Perhaps the best general reference is Pettai (1984). Useful sections on system noise are found in Freeman (1997), Johns and Martin (1997), and Ludwig and Bretchko (2000). Noise in microwave systems is described by Siegman (1961) using the informative transmission-line approach. Electronic device noise is treated by Ambrózy (1982) and Van der Ziel (1986).

## Communication Circuits and Electronics

The design and implementation of filter circuits are detailed in Hilburn and Johnson (1973), Van Valkenburg (1982), and Williams and Taylor (2006). Recent introductory treatments of communication electronics are found in texts such as Van der Puije (2002), Tomasi (1998), and Miller (1999). More advanced details are given by Clarke and Hess (1971), Krauss, Bostian, and Raab (1980), Smith (1986), Freeman (1997), Johns and Martin (1997), and Ludwig and Bretchko (2000).