20SK – Signals and Codes

Lecture 3 – Complex exponentials

Topics discussed:

- Analytical description of complex exponential in continuous and discrete time
- Review of complex numbers
- Euler´s formula in complex exponentials … relation to sinusoids
- Phasor, Phasor addition, rotating Phasor, complex amplitude
- Negative and positive frequency concept
- Sinusoid (Phasor) addition rule

The relevant literature is [2, lecture 2], [3, chapter 3] + CZ [4, chapter 2]

Resources

[1]   Introduction to Signals and Systems

[2]   Oppenheim, A.: Course materials for 6.007 Signals and Systems, Spring 2011. MIT OpenCourseWare (http://ocw.mit.edu/), Massachusetts Institute of Technology

[3]   McClellan, Schafer and Yoder, Signal Processing First, ISBN 0-13-065562-7., Prentice Hall, Upper Saddle River, NJ 07458. 2003 Pearson Education, Inc.

[4]   Hrdina, Z., Vejražka, F.: Signály a soustavy. [Skriptum] Praha, ČVUT, 1998

Additional resources:

[a]   Wickert, M.: Course materials for ECE 2610 Introduction to Signals and Systems, spring 2011. OpenCourseWare (http://www.eas.uccs.edu/wickert/ece2610/), University of Colorado

[b]   Gallager, R.: Course materials for 6.450 Principles of Digital Communications I, fall 2006. MIT OpenCourseWare (http://ocw.mit.edu/), Massachusetts Institute of Technology