

Supplemental Material

Glenn S. Smith, *An Introduction to Classical Electromagnetic Radiation*, Cambridge University Press, 1997.

After writing this textbook, I published a number of papers that extend the treatment of topics in the book. These papers are pedagogical in nature, and I have used them as supplemental material for a graduate course that I taught based on the book.

Chapter 3: Inhomogeneous plane waves and the plane-wave spectrum

In this chapter, I use the plane-wave spectrum to describe the radiation from apertures. In the following paper, I apply the same technique to the guiding of electromagnetic waves in a parallel-plate waveguide. This is an alternative to the traditional treatment of waveguides, which is based on an eigenvalue problem. My intention is to present a simple introduction that shows many of the important points associated with waveguides and can precede a later treatment of the eigenvalue problem.

G. S. Smith, "A different introduction to the guiding of electromagnetic waves," *Am. J. Phys.*, Vol. 79, March 2011, pp. 282-290.

Chapter 7: Dipole radiation, Section 7.7: The color and polarization of skylight

In this chapter, I discuss dipole radiation, and as an example of this phenomenon I use the scattering of light by the molecules in the atmosphere - the "blue sky" problem. After writing the book, I studied three aspects of that problem in more detail and the results are discussed in the papers listed below.

G. S. Smith, "Human color vision and the unsaturated blue color of the daytime sky," *Am. J. Phys.*, Vol. 73, July 2005, pp. 590-597.

G. S. Smith, "The polarization of skylight: An example from nature," *Am. J. Phys.*, Vol. 75, January 2007, pp. 25-35.

G. S. Smith, "Summing the molecular contributions to skylight," *Am. J. Phys.*, Vol. 76, September 2008, pp. 816-825.

Chapter 8: Radiation from thin-wire antennas

In this chapter, I introduce an approach for describing the radiation in the time-domain from simple wire antennas. This is to be compared with the traditional approach, used in most textbooks, that is for the frequency domain. The emphasis is on the use of pulsed excitation to establish physical understanding of the process of radiation. In the following papers I extend that treatment.

G. S. Smith, "Teaching Antenna Radiation from a Time-Domain Perspective," *American Journal of Physics*, Vol. 69, pp. 288-300, March 2001.

G. S. Smith, "Teaching Antenna Reception and Scattering from a Time-Domain Perspective," *American Journal of Physics*, Vol. 70, pp. 829-844, August 2002.

G. S. Smith, "On the Interpretation for Radiation from Simple Current Distributions," *IEEE Antennas and Propagation Magazine*, Vol. 40, pp. 39-44, August 1998.

G. S. Smith and T. W. Hertel, "On the Transient Radiation of Energy from Simple Current Distributions and Linear Antennas," *IEEE Antennas and Propagation Magazine*, Vol. 43, pp. 49-63, June 2001.