FOUR PROBLEMS IN RADAR

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Abstract Radar, short for RAdio Detection And Ranging, was invented almost a century ago by Christian Hulsmeyer in Düsseldorf, Germany. Since that time, great strides in radar have brought us air traffic control, airborne synthetic aperture radar for crop production assessment, and much more. Advances in digital technology, computing architectures and software, and solid state radio frequency devices now offer some of the most exciting opportunities for fielding new radars with previously unheard of capabilities. All of this leads to the four challenge problems in radar discussed in this chapter.

Keywords: AWACS, Hulsmeyer, PRF, RF, SBR, SNR, UHF, Watson-Watt, antenna, clutter, detection, frequency division multiplexing, microwave, modulator, phased array, pseudo-random, pulse compression, radar, radar range equation, sidelobe, spatial diversity, telemobiloskop, temporal diversity, tracker, transmitter, waveform.