Title: Complementary Code Sets and Radar Pulse Compression

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Abstract

Pulse compression was conceived in the early days of radar to solve an apparent trade-off, in peak-power-limited systems, between range resolution and range. When matched filtering is employed to optimize signal-to-noise ratio, the response is the autocorrelation of the pulse compression codes used to modulate the radar pulse. Optimization of these codes for a given length often requires combinatorial searches with daunting complexity. Interestingly, if more than one code is used, ideal performance can be achieved, at least in theory. Although practical issues have kept these code sets from being considered for most radar projects, these are beginning to yield to Mathematics, and even to some "cool" Number Theory. I look forward to explaining background and recent results.

Speaker Bio

Greg Coxson has spent most of his career in the radar industry, working at defense electronics firms such as Hughes Radar Systems in El Segundo, CA and Lockheed Martin MS2 in Moorestown, NJ. He currently serves on the faculty of the Naval Academy Electrical Engineering department, where he is developing a new course in Principles of Radar and Electronic Warfare. He also teaches Cyber Security II.