1077-94-1183 **Gregory E Coxson***, 962 Wayne Avenue, Suite 800, Silver Spring, MD. *Constructions and Existence Results for Complementary Code Sets.* Preliminary report.

Complementary code sets offer an interesting alternative for waveform design in radar or communications. A popular approach for finding complementary sets is via Hadamard matrices, whose set of columns and set of rows are complementary. Complementary code matrices (CCMs), which include the Hadamard matrices, provide an alternative with several benefits. For instance, the KxN CCMs enjoy a one-to-one relationship to the sets of K length-N complementary codes. Also, in the binary case, the Hadamard matrices exist only for orders 1, 2, and those divisible by 4; we will show that the restrictions are not as tight for the CCMs, allowing a richer source of complementary sets. We will exhibit several Hadamard construction techniques that extend to the complementary code matrices. Finally, existence results will be derived for NxK complementary code matrices, yielding simple indicators for the existence of sets of K length-N complementary codes. While the primary focus will be the binary case, several results extend to the unimodular case. (Received September 17, 2011)